

# **Chapter 7 - Environmental Analysis of the Oliver to Exeland Routes -- Existing Conditions and Potential Impacts**

## **Physical Overview of the Routes and Substation Modifications Proposed**

### **Geography**

#### **Topography-Oliver 1, 2, & 3**

Three route alternatives, Oliver 1, 2, and 3, cut across the same three topographical areas. The areas are:

- The Superior Lowland.
- The Northern Highland.
- The Central Plain.

The Superior Lowland is part of the Lake Superior basin. The border between the Superior Lowland region and the Northern Highland region is the edge of the basin. The Lake Superior basin or lowland was formed as a rift valley, a gradual dropping down of a block of the earth's crust. The height of the edge or escarpment is 150 to 350 feet and is located about 10 miles from Lake Superior. It is not a cliff, but rather a gently sloping plain from the fault to the lake. The part of the fault crossed by the proposed routes has been determined to be of pre-Cambrian or Cambrian age.

The last glacier left very few moraines on the Superior Lowland in northwestern Wisconsin. The lowland plain is completely covered by stratified lake and stream deposits. In the soil and subsoil of this belt 82 percent of the material is clay and silt, much of it red in color. The Superior clay, as it is known, covers more than 1,000 square miles. The area south of Superior and Ashland is a plain gradually sloping toward the lake, its grade varying from 10 to 50 feet per

mile. The surface in the project area is not a strictly flat plain, except near Superior where it provides the level site for this city. Farther from the lake the plain has been deeply trenched by postglacial streams forming ravines 40 to 100 or more feet deep. Current and past streams have so dissected the plain as to make portions of it very hilly. The clay has been more extensively dissected than the sand because the water sinks into the latter and erodes it very little. This stream cutting has created a need for railway bridges and culverts. The soil is not well adapted for farming, although grazing and the production of hay do occur. The topography of the stream-sculpted portions of the plain further limit agriculture and horticulture.

In east central Washburn County and along a narrow eastern edge of Sawyer County, about 11 miles of the route cross the Central Plain area. The Central Plain is an inner lowland with a floor of weak Cambrian sandstone. The general slope is very gradual, about 4 feet per mile. There are some swamps in the Central Plain because the glaciers frequently deposited some clayey moraine material over the otherwise permeable sandstone.

The greatest length of the Oliver routes, including most of Douglas County, northern Washburn County and southwestern Sawyer County, is located on the Northern Highland area. This area was once (600 to 700 million years ago) mountainous with peaks like the Alps. These peaks were gradually worn down until nothing remains but a peneplain, a low undulating plain with occasional hills. The Northern Highland is one of the few places where these old mountain remnants are near the surface. The majority of the Northern Highland region is a smooth upland where few rocks punctuate the surface. An indication of the flat nature of the topography is the straight lines of the railroad corridors. This straight course is made possible by the low relief of the peneplain. The land generally slopes to the south, but usually no more than 4 to 5 feet per mile.

The Northern Highland also contains several types of ridges. The most visible are known as monodnocks. There are several well-known monodnock-type ridges but none are located near the Oliver routes.

The Northern Highland covers a large portion of northern Wisconsin and contains the areas of highest elevation in the state. This region, on the whole, has been profoundly affected by the glacial occupation. The soil, in general, is stony and sandy. This results in vast areas that are better suited to forest than crop production. This is especially true since there are many large swampy areas. The lakes are a steady source of water for the rivers that flow from this highest part of the state, as well an attraction to fishermen and summer visitors. The rivers, which were important waterways for the ancient and recent native peoples and the early white explorers, are still important to the tourist trade.

### **Geology-Oliver 1, 2, & 3**

Some of the oldest rock in the world is near the surface in northern Wisconsin. This bedrock is part of the "shield" rock of the North American landmass. Each continent contains at least one such core or shield that appears near the surface over wide areas. These shields were so named because they tend to bulge up toward the center like a medieval battle shield. The shield in North America is often called the Canadian Shield because it covers the eastern two-thirds of

Canada. It also extends into the northern third of Wisconsin. This shield was formed during the early genesis of the earth up to about 600 million years ago. The Lake Superior lowland and the Northern Highland peneplain described in the topography section cover the portion of the shield in Wisconsin.

The Arrowhead-Weston project is located, almost entirely, on this high part of the shield in northern Wisconsin. The down sloping edge of this ancient rock shield also lies under the southern two-thirds of Wisconsin but is buried under hundreds of feet of younger rocks. These younger rocks form the bedrock of southern Wisconsin. The depth of the shield rock in southern Wisconsin is evident in several ways. Some river valleys in southern Wisconsin have been cut deep enough to expose the shield, in some locations it has been encountered during well borings, and the summit of some hills in the Baraboo Hills region show the shield rock emerging through the covering of younger rock.

Over time, wind, rain, and rivers smoothed the surface of the shield in northern Wisconsin. Then, for 200 million years, vast inland seas deposited sediments in overlapping layers as they retreated and advanced several times. Almost all of the sediments deposited in northern Wisconsin were subsequently weathered away, exposing the “shield” bedrock again. During the last 2-3 million years northern Wisconsin was assaulted with glaciers that knocked down forests, erased rivers, scraped and ground up the surface of the land. After four separate advances of glaciers, over thousands of years, the ice melted back, pouring out floods of melt water, dumping its waste rock over the terrain and leaving the barren land to restore itself. The ice left its mark in northern Wisconsin, so vividly and in so many ways, that this state is renowned as a repository of glacial features and is a textbook of glacial history. As a result of all this more recent geologic activity in northern Wisconsin, the bedrock is generally covered by varying depths of glacial deposits.

About 10 miles from the shore of Lake Superior there is a gently sloping escarpment that falls 150 to 350 feet before reaching the lake. (See the section on topography.) This deformation follows a fault line in the bedrock. The fault activity was far enough in the past that the escarpment has been modified by weather and other surficial activity, to the gentle slope of today.

Important geologic formations of varying age at many places in the state have been described. Because of the significance of these formations and what they have revealed and continue to reveal through continued research, these formations need to be preserved. Of the formations described, none would be affected by the proposed routes in the northern sector.

One geologic element could affect installation of an underground line at the Namekagon River. If a line is trenched and then bored under the Namekagon River, boulders and cobbles of glacial deposits could interfere with installation. If substantial boulders are encountered and have to be avoided, the cost of installation would be higher than the average cost estimates provided in the application. Recent installation of an underground petroleum pipeline at this location should provide some information about the size and frequency of boulders and cobbles in this area.

## Soils-Oliver 1, 2, & 3

### Origins and associations

Most of the land that would be affected by the proposed project is located in the Northern Highland geological province of Wisconsin. Glaciers in this region have stripped sediments from the area and deposited glacial till over the hard rock that was resistant to glaciation. Soils here tend to be stonier and sandier than those in the rest of the state and there are large areas of wetlands. Washburn County has numerous lakes and marshes. Swamps and marshes also cover a portion of Douglas and Sawyer Counties. There is little lime in the glacial drift of the Northern Highland, so the water from wells and springs is predominantly soft.

The northern 30 percent of Douglas County lies in the Lake Superior Lowland province. Glacial Lake Duluth formerly occupied this area.

**Douglas County:**<sup>190</sup> In Douglas County, the proposed Oliver 1 and Oliver 2 Routes pass through the same soil associations. The northern third of the routes crosses the Hibbing-Ontonagon-Rudyard-Bergland soil association. This association has well drained to poorly drained, nearly level to gently sloping soils that are dissected by steep-sided drainageways. They formed in red clay, alkaline lacustrine clay, or glacial till. Hibbing, Ontonagon, and Rudyard soils are suited for growing small grains, grasses, and legumes. Bergland soils are suited to these crops if the soil is drained and the species grown can tolerate wetness. Hibbing, Ontonagon, and Rudyard soils have medium natural fertility and moderate available water capacity. Bergland soils have low natural fertility and moderate available water capacity.

Soils in the middle third of the routes in Douglas County alternate between two soil associations. First, the Gogebic-Keewenaw-Tula association has well drained to somewhat poorly drained, nearly level to steep soils that formed in acid sandy loam and loamy sand glacial till. Most areas of this association are wooded. Small grains, grasses, and legumes are grown in some cleared areas, but the choice of crops that can be grown in this area is limited by the short, cool growing season. The second soil association in the middle region includes peat and muck soils. These soils are very poorly drained, nearly level, acid to alkaline organic soils that are found in depressions and on bottomlands. Most of this association is wooded.

The southern third of the routes in Douglas County crosses the Omega-Vilas-Cloquet-Pence soil association. This association has excessively drained to well-drained, nearly level to steep soils that formed in acid sandy glacial outwash or thin loamy deposits. Sand or sand and gravel outwash underlie these soils. Most of this association is wooded. Small grains, grasses, and legumes are grown in some cleared areas, but low available water capacity and low natural fertility generally limit crop production.

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<sup>190</sup> *Douglas County Farmland Preservation Plan*, Douglas County Zoning and Planning Committee, Douglas County Agriculture and Extension Committee, Northwest Regional Planning Commission, April, 1982, pp. 6-15 and the Wisconsin Department of Natural Resources in Douglas County.

Farmland in the county tends to be found on the red clay soils. All of the other soils support mostly forested land.

**Washburn County:**<sup>191</sup> The soils that would be affected in Washburn County are primarily sandy loams, loamy sands, and silt loams. Most of the northern half of both potential routes in Washburn County crosses soils that are gently sloping to steep, somewhat excessively drained to somewhat poorly drained, and loamy. Sandy loam or loamy sand glacial till underlies these soils. Major soils in this area include Amery, Cloquet, Iron River, and Monico soils. The southern parts of the proposed routes pass through two alternating soil associations. One association has nearly level to steep, somewhat excessively drained, deep sandy soils; well drained loamy soils underlain by glacial till; and very poorly drained organic soils located in bogs. Major soils in this association are Cloquet, Iron River, Vilas, and peat and muck soils. The other association crossed by the southern part of the routes has nearly level to moderately steep, somewhat excessively drained deep sandy soils and well-drained shallow loamy soils underlain by sand and gravel. Major soils in this association are Chetek, Omega, and Pence soils. This association is also found in the northern part of Washburn County. The proposed routes do not appear to affect prime farmland in this county. Washburn County soils tend to be acidic and low in essential nutrients necessary for crop production. Phosphates, potassium, and magnesium levels are lower than in any other soil types in the state, while the less essential iron occurs in excessive and in some cases detrimental amounts.

**Sawyer County:**<sup>192</sup> In Sawyer County, the northern portion of the potential routes passes through mainly sandy loam soils in two soil associations. The Cloquet-Vilas association has sloping to steep soils on uplands. They formed in shallow sandy loam or loamy sand over glacial till. The Omega-Sayner association has nearly level to sloping soils on glacial outwash plains and stream terraces. They formed in deep sands and shallow loamy sands over medium to coarse sands or gravels. These soils are excessively drained. The southern portions of the routes in Sawyer County are mainly in silts or silty loams. These soils are primarily included in two soil associations. The Santiago-Freer-Freeon-Amery association has nearly level to moderately steep soils on glacial till plains and uplands. These soils formed in 15 to 36 inches of silt (loess) over a firm reddish-brown sandy loam-to-loam glacial till. The Antigo-Brill-Stambaugh association has nearly level to gently sloping soils on glacial outwash plains and stream terraces. These soils formed in 20 to 40 inches of silty material over loose sands and gravel. Prime farmland is more concentrated in the southern portions of the potential routes in Sawyer County.

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<sup>191</sup> *Washburn County Farmland Preservation Plan*, Washburn County Farmland Preservation Advisory Committee, Northwest Regional Planning Committee, May, 1982, pp. 12 and 13; Washburn County USDA Natural Resources Conservation Service, Washburn County USDA Farm Service Agency, and Washburn County University Extension.

<sup>192</sup> *Sawyer County Farmland Preservation Plan*, Sawyer County Zoning Committee, Northwest Regional Planning Commission, May, 1982, pp. 12-14; Sawyer County Conservation Department; Sawyer County University Extension; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March, 1996.

### **Vegetative cover-Oliver 1, 2, & 3**

South of the city of Superior in northern Douglas County, the Oliver Routes pass through an area supporting a mixture of northern sedge meadow/shrub wetlands, deciduous forest consisting largely of aspen, birch, and red maple, and a series of upland plateaus consisting mostly of willows, alders, and grassland species tolerant of the heavy clayey soils. These plateaus are perched above several of the major rivers flowing north to Lake Superior, including the Nemadji and Pokegama. Further south in Douglas County, these communities grade into upland mixed deciduous/coniferous forest. Jack pine and northern pin oak, interspersed with bracken fern grasslands, are dominant on sandier soils, while white pine, red maple, and oak are prevalent on more mesic sites.

As the routes continue in a southeasterly direction through northern Washburn County and southwestern Sawyer County, they cross through an area dominated by numerous lakes of varying size and their tributaries. Depressions and lowland sites contain wetlands supporting a mixture of tamarack/spruce forest and open sedge meadows dominated by sedges, reeds, and cattails. Deciduous forest, with scattered white and red pine, is the primary vegetative cover found in upland areas. Small farm operations, producing cranberries, beef cattle, or dairy products are found in limited numbers along the routes. A more detailed discussion of the impacts on these plant communities and land uses is found later in this chapter.

## **Oliver 1 Route**

### **Detailed description**

The route described below and shown in Figures 7-1 and 7-2 is a continuation of a 12-mile route for a double circuit 345/115 kV line from the Arrowhead Substation in Minnesota across the St. Louis River to Oliver, Wisconsin. It is approximately 94 miles long. The portion of the project in Minnesota is covered under an application to the MEQB. The Oliver 1 Route, as proposed, would follow existing corridors of transmission lines, pipelines, railroads, and roads where feasible. Where it is proposed to follow an existing transmission line corridor it could be built as a double circuit with the existing line or as a single circuit line, parallel to the existing line. (See Figures 6-5, 6-6, 6-7, and 6-8.)

The route begins by crossing the St. Louis River at its narrowest point parallel to other highway/railway/utility crossings. The Minnesota-Wisconsin state boundary runs down the middle of the river. The proposed route goes through the village of Oliver and then follows the existing MP 115 kV transmission line ROW west for approximately one mile as a double circuit rebuild parallel to and between STH 105 and the Duluth, Missabe and Iron Range Railway Company (DM&IR) railroad. This area is a mix of residential and commercial property closer to Oliver and grades into lowland alder thickets east of town.

As it leaves Oliver the route extends east along the DM&IR railroad ROW for approximately 6.2 miles crossing the Little Pokegama River, the Pokegama River, STH 35, the Nemadji River,

Crawford Creek, CTH A, Bluff Creek, and Crawford Creek. The area consists of intermittent forest and agricultural land.

The route turns due south to follow an existing SWL&P 161 kV transmission line along the east side of Lyman Lake Road, crossing two branches of Bluff Creek, an unnamed creek, and CTH C. The existing line comes from the Stinson Substation in Superior. South of CTH C the route continues southeast along the existing MP 161 kV transmission line and the Lakehead oil pipeline across an abandoned railroad bed that now serves as a snowmobile trail. The route crosses two branches of the Little Amnicon River and a Northern Natural Gas pipeline that runs in an east-west direction.

The route continues generally southeast along the existing SWL&P 161 kV transmission line ROW, intermittently paralleling the Lakehead oil pipeline, and crossing six small streams associated with the Amnicon River, Silver Creek, and Park Creek. It runs southeast from Solon Springs to Gordon. Near the Solon Springs airport, the route turns south, away from the transmission line, to prevent conflict with the glide path into the runway. The route crosses USH 53, Leo Creek, and the St. Croix River north of Gordon. The St. Croix River crossing is in the vicinity of multiple road and utility crossings.

The route passes along the east side of Gordon, crossing the Eau Claire River, CTH Y and CTH G. As it passes east of Red Lake and approaches the Douglas/Washburn county line, the route crosses the Totogatic River at a location where the existing transmission line and pipeline cross. The Wisconsin Central rail corridor and the Lakehead oil pipeline continue to parallel the proposed route. This area is predominantly forested.

South of the Douglas/Washburn county line the route extends southeast, along the existing NSPW 161 kV transmission line and Lakehead oil pipeline ROW. It crosses STH 77, Frog Creek, Sink Creek, two branches of Chippanazie Creek and CTH M. The Wisconsin Central rail corridor parallels the proposed route, except for a short section near Chittamo and in the vicinity of CTH M.

South of CTH M, the new 345 kV line would be double circuited with the existing 161 kV line across Chippanazie Creek, Stanberry Lake, USH 63, and the Namekagon River to a point southwest of Hayward near the Bean Brook State Wildlife Area. This area is quite constrained, as the route, adjacent to the Lakehead oil pipeline, skirts Loon Lake, Beaver Lake, and crosses Bean Brook.

At the Washburn/Sawyer county line, the route heads southeast toward the Stone Lake Substation and Boylan Road. At Boylan Road the route turns south crossing Sissibagama Creek, STH 70, and CTH F passing just east of the community of Stone Lake. Near Stone Lake the route parallels the Wisconsin Central railroad for approximately two miles.

The route leaves the railroad corridor and turns south for approximately 3.2 miles and then angles southeast for approximately one mile. It then turns east and continues for approximately 3.5 miles where it intersects the Wisconsin Central railroad and the Lakehead pipeline.

This section of the route was developed in order to bypass the LCO Reservation. This portion of the route crosses Alder Creek, Benson Creek twice, and two other unnamed streams. Forests dominate this area. An alternative to the 3.5 mile section of the route in this area was proposed by the applicants after the application was filed at the PSCW. The alternative would parallel the original route about 0.5 miles further south and avoid the LCO Reservation.

The route extends southeast along the Lakehead oil pipeline crossing Tuscobia Park Falls State Trail, Alder Creek, and a branch of Swift Creek twice. After crossing CTH C, the route continues southeast following the pipeline corridor to STH 48.

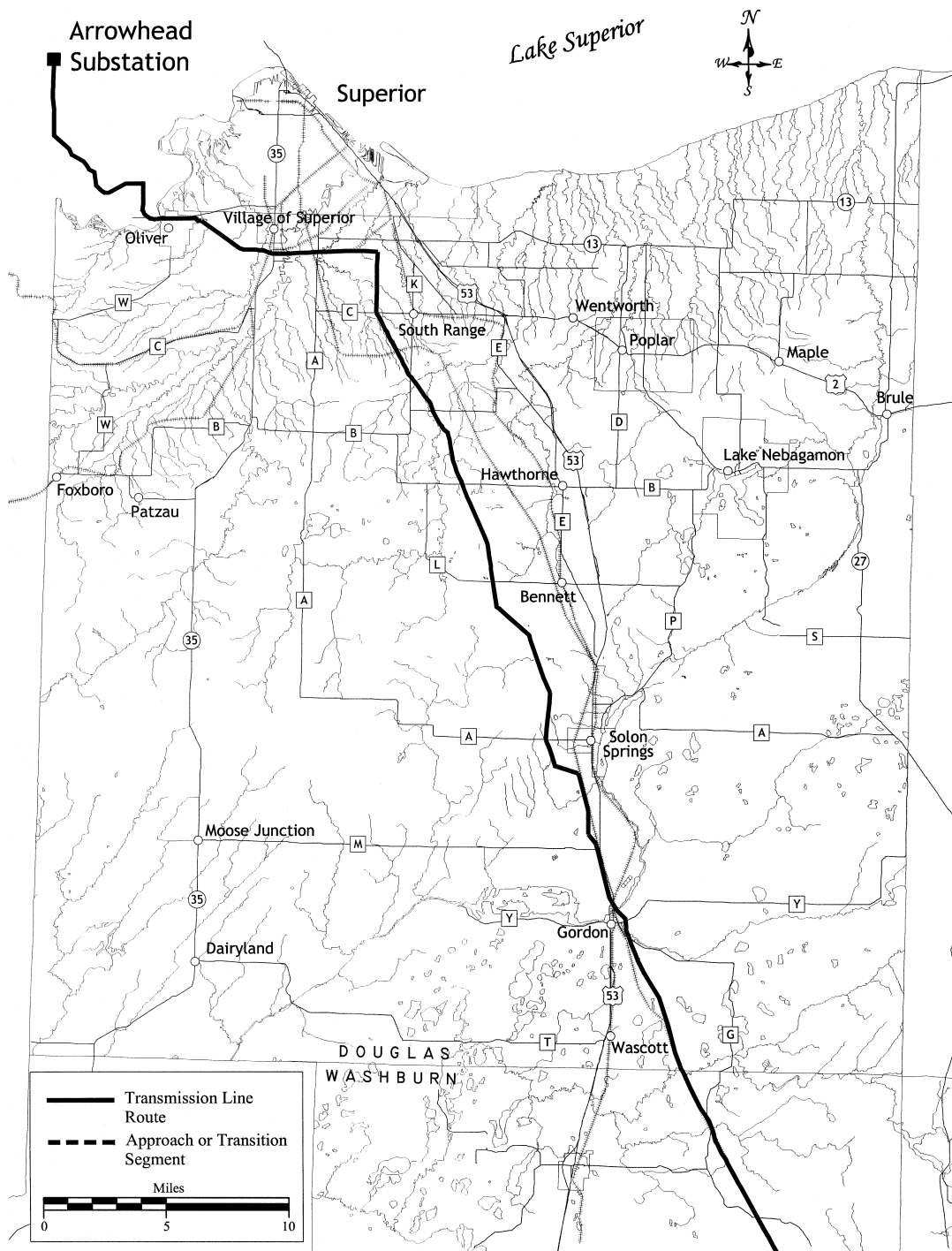
Just south of STH 48, the route deviates south, away from the Lakehead oil pipeline and around two farmsteads, for approximately two miles before rejoining the pipeline corridor. This section crosses Maple Creek twice, three unnamed streams, Badger Creek, two unnamed streams, and CTH C as it approaches the Sawyer/Rusk county line. This area is primarily forested with some agricultural land present.

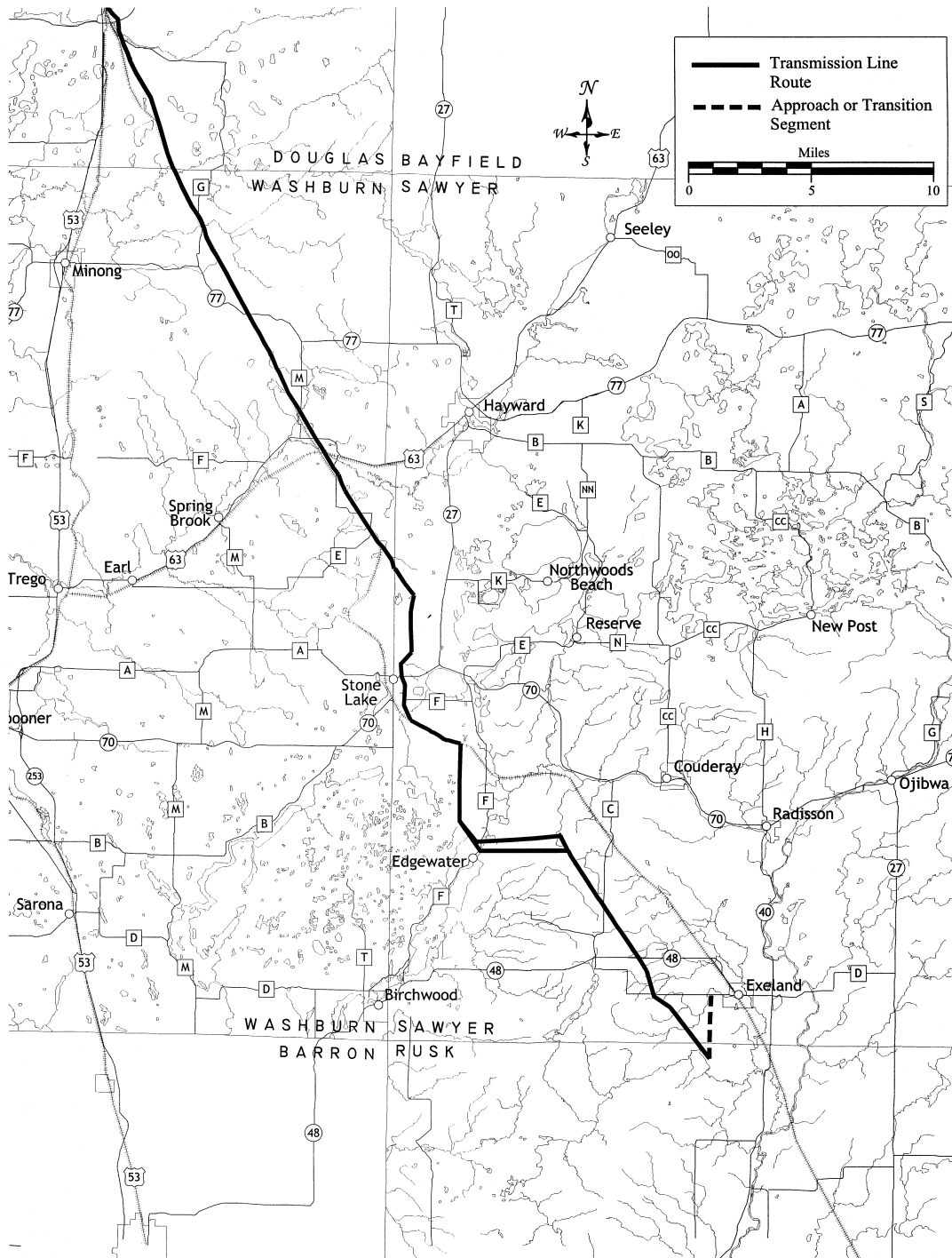
The route extends southeast along the Lakehead pipeline for approximately 2.7 miles. It crosses Swan Creek and one other unnamed stream and comes very close to Big Weirgor Creek.

The junction of segments 311 and 309 on this route is the end of the Oliver 1 Route.



Figure 7-1 Oliver 1 Route (1 of 2)



**Figure 7-2     Oliver 1 Route (2 of 2)**

## Natural resources

### Lakes

There are seven lakes within 1,000 feet of the proposed route. They include: Grover Lake, Lily Pad Lake, Red Lake, Sugarbush Lake, Stanberry Lake, Loon Lake, and Beaver Lake.

The proposed 345 kV transmission line would actually cross a portion of Stanberry Lake; in all other cases the line would pass near the lake. None of the lakes is designated OERW, but Grover, Lily Pad, Loon, and Sugarbush Lakes are smaller, more remote and less developed while Stanberry, Beaver, and Red Lakes are somewhat larger and more developed (homes, cabins, boat accesses). Grover Lake is described in the NHI as a shallow, soft, seepage lake notable for its invertebrate diversity. It covers 7 acres with a maximum depth of 8 feet and has a sand and gravel bottom.

The new transmission line would follow an existing 69 kV or 161 kV transmission line corridor near or across all of these lakes. The addition of the proposed 345 kV line would change the appearance of the existing transmission line and result in incremental impacts on surrounding resources and the people who live there. If the new line is constructed as double circuit, the existing 161 kV line would be torn down and the new line would be constructed on the same corridor. The corridor width would have to be increased by about 0 to 20 feet (depending on the existing corridor width). The new poles would be taller (125 to 135 feet vs. existing 75 feet) and there would be three more double (bundled) wires on each pole. Only the portion of the line over Stanberry Lake is proposed to be double circuited for certain. Near all of the other lakes, both a double circuit line design and a parallel construction design have been proposed.

If the line is constructed parallel to the existing line, the existing line would remain as it is and the new line would be constructed next to it. The corridor would have to be widened 85 to 115 feet, depending on the width of the existing corridor and whether the new line is on H-frame structures or single pole structures. H-frame construction requires a wider ROW, but the poles would be shorter (85 to 95 feet) than single pole construction (90 to 105 feet).

From the point of view of lake users and dwellers there is a difference in the types and degree of impact for each type of construction. Double circuit construction would make the poles visible from farther away, but parallel construction would require more new ROW clearing. The best choice would be specific to each lake area, depending on the current land use and land cover, proximity to the lake, potential to mitigate impact on resources and people, and projected future use of the lake and surrounding land.

Regardless of which construction design is chosen, there would be a potential for soil compaction and erosion of the soils under the lines. Heavy construction equipment needed to remove the old line and install the new line can cause soil compaction or soil disturbance in the ROW. Special procedures to protect the immediate environment from these impacts near lakes and wetlands could be specified by the COE or the DNR as part of any approved permit.

## Rivers and streams

There are 48 river/stream crossings on the Oliver 1 Route. Eight of the crossings are waterways that have been designated as either OERW<sup>193</sup> and the DNR classifies 13 of the waterways as trout streams. Ten of the crossings are inaccessible.

The following table indicates which streams along the Oliver 1 Route have been designated as OERW and/or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout is dependent on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the stream habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations. Use of BMP and selective cutting near streams could help protect trout streams.

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<sup>193</sup> The DNR maintains a list of outstanding and exceptional resource waters (OERW) of the state. Outstanding resource waters (ORW) include all national and state wild and scenic rivers. ORW are defined as lakes or streams having excellent water quality, high recreational and aesthetic value, high quality fishing and that are free from point source or non-point source pollution. Exceptional resource waters (ERWs) are similar to ORW in terms of water quality, recreational and aesthetic value and wildlife habitat but may be susceptible to future point source pollution. OERWs provide unique environmental settings that have not been significantly affected by human activities. The designated streams are identified in the state administrative code.

**Table 7-1 Rivers and streams on the Oliver 1 Route (from north to south)**

St. Louis River	Branch of Park Creek**	Unnamed stream
Unnamed stream	Leo Creek	Unnamed stream
Unnamed stream	St. Croix River	Alder Creek*τ
Little Pokegama River	Eau Claire River	Branch of Swift Creek
Pokegama River	Totogatic River	Branch of Swift Creek
Nemadji River**	Frog Creek	Maple Creek τ
Crawford Creek**	Sink Creek	Maple Creek τ
Branch of Bluff Creek	Branch of Chippanazie Creek**τ	Unnamed stream
Branch of Bluff Creek	Branch of Chippanazie Creek**τ	Unnamed stream
Unnamed stream	Chippanazie Creek	Unnamed stream
Unnamed stream	Namekagon River*	Badger Creek*τ
Branch of Little Amnicon River** τ	Unnamed stream	Unnamed stream
Branch of Little Amnicon River** τ	Bean Brook τ	Unnamed stream
Branch of Amnicon River**	Sissabagama Creek	Swan Creek*τ
Branch of Silver Creek	Alder Creek*τ	Big Weirgor Creek*
Branch of Silver Creek**	Benson Creek*τ	
Branch of Silver Creek**	Benson Creek*τ	

\* Designated Outstanding or Exceptional Resource Water.

\*\* Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no existing overhead structure present.

### Accessibility

A stream crossing is considered inaccessible if no public road exists between two streams. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor,<sup>194</sup> at least until the equipment reaches a river or stream. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks. However, sometimes two streams are very close together or are located in an area with little development. In that case, there are three possibilities: a temporary or permanent road could be built;<sup>195</sup> a temporary or permanent bridge could be built; or the heavy equipment could be allowed to drive through the streambed to the other side.

The preferred access method will vary depending on the environmental sensitivity of the stream, the condition of the stream, and the environmental damage that might be caused by disturbing

<sup>194</sup> If the corridor being used to move equipment from pole site to pole site is through wetlands there may be further accessibility concerns. See the section on wetlands later in this chapter and the discussion of construction practices in Chapter 6.

<sup>195</sup> Use of private roads or logging roads are possible if arrangements are made with the owner. Some incremental impact is likely since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

the streambed or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

The section in Chapter 5 on Water Resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings, or could avoid stream crossings by selecting a different route or different system alternative.

Based on the assumptions described above, construction of as many as seven roads may be needed to access all of the streams on the Oliver 1 Route. One of the inaccessible areas is between the Nemadji River and Crawford Creek. The character of the Nemadji River and Crawford Creek and their steep riverbanks makes it impossible for large construction equipment to drive across these streams. There are long rail trestles at both of these proposed crossings and the valley cut by each stream is deep and wide. A temporary bridge would probably be very expensive. Some kind of access road, temporary or permanent, would probably have to be built in order to access the east bank of the Nemadji River and the west bank of Crawford Creek. The surrounding area is already very developed and a new road would not be intrusive.

Two crossings of the branch of Chippanazie Creek would also be difficult. Fairly extensive environmental impact in a sensitive and undeveloped area would be likely regardless of the crossing methods used. There is an existing railroad bed and transmission line adjacent to the corridor but the ROW is surrounded by scrub/shrub wetlands that are part of the Lost Lake complex. This area includes northern wet forest, open bog, and a soft bog lake and has been identified for consideration as a State Natural Area.

These and other possible access roads are described in the section of this document describing local community and road impacts.

#### **Specific information about some of the rivers**

Not every stream crossing on the Oliver 1 Route has been analyzed in detail but the following information was gathered on site visits or received from people who are familiar with the stream or the area of the crossing.

**St. Louis River:** The proposed crossing of the St. Louis River is at the Hwy 105 bridge, about eight miles south of where the river empties into Lake Superior (segment 397). The state line between Minnesota and Wisconsin runs down the river for several miles above and below the proposed crossing. The river valley at this location is about three quarters of a mile wide, most of it wetland on the Minnesota side of the river.

The existing bridge over the St. Louis River is a double-decker steel bridge with a rail line on the top level and two motor vehicle lanes on the lower level. Vehicles over five tons are prohibited. The vehicle level consists of two very narrow lanes with a wood bed. This bridge is scheduled to be rebuilt starting in 2001. An existing transmission line runs beside the bridge with most of the

poles on the Minnesota side of the river. Within the valley there are now two sets of steel poles (one set in Wisconsin) and three sets of wood poles, all in Minnesota. In overview, the river valley appears undeveloped but there is an industrial site and rail yard on the Minnesota shore.

On the Wisconsin side of the river there is a small housing development on a bluff overlooking the valley near the bridge. If the line stays along the bridge and the rail tracks, only one house (a new house) would be physically close to the proposed line. Because there is an existing transmission line crossing the river at this location, concerns would be related to the incremental impacts of the additional circuit. There are six houses in the development, some may be seasonal, and not all have a clear view over the valley. However, the proposed line would affect the view of the river valley from several homes.

**Nemadji River:** The river has carved a wide, steep-banked ravine with many meanders into the old clay soils. (See information above on accessibility.) The Nemadji River also has a 4,000-foot wide 100-year floodplain in this area. The Nemadji River is listed in the NHI as a grade B (Good) river community and is listed in the NRI<sup>196</sup> for its scenic beauty. The Oliver 1 Route (segment 393) parallels an existing rail corridor. There are two rail trestles in the area of the proposed crossing. The crossing is in a developed area, close to a rail yard, within view of STH 35, and within one quarter mile of a new housing subdivision.

**St. Croix River:** The St. Croix and the Brule Rivers were outlets for Lake Duluth, the glacial precursor of the present day Lake Superior. The course of both rivers has changed since glacial times but both have continued to be historically important waterways. The St. Croix is a popular canoeing river with thousands of visitors every year. The portion of the St. Croix River near the proposed crossings, often referred to as the Upper St. Croix, has a slow meandering character with broad open expanses of wetland.

The crossing on the Oliver 1 Route (segment 360) is an existing pipeline and transmission line crossing. There is a trailer house at the existing crossing on the north bank. In addition to the pipeline/transmission line crossing there are several other structures crossing the river in close proximity. On the downstream side of the crossing, within a few hundred feet there is an old railroad bridge that has been rebuilt for use as a recreation trail, an active railroad bridge, a two-lane road bridge, and a four-lane divided bridge for USH 53. The Gordon landing is about a quarter mile downstream from the last bridge.

Of the two proposed St Croix River crossings (the other is on the Oliver 2 Route immediately south of St. Croix Lake), this one has less aesthetic impact from the perspective of a canoeist on the river. This route would also connect to the crossing of the Eau Claire River that would have the least environmental and aesthetic impact. This crossing may also be preferable from an engineering perspective because the river and adjoining wetlands at the Oliver 2 Route crossing probably cannot be easily spanned, and would require placement of poles in the wetland areas.

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<sup>196</sup> See the section in Chapter 3 on Environmental Analysis of System Alternatives for a full description of NRI.

**Eau Claire River:** The Eau Claire River shorelines are quite wild and the current is medium with some low rapids. It is a popular canoeing and fishing river that connects to the St. Croix River. Trout fishing is good in fast water stretches and bass, pike, and musky are caught above the dam near Gordon. The river is narrow, winding, and generally shallow with lots of downed trees that create riffles and pools. Numerous fish, including trout, are visible in the clear water. Herons are commonly observed feeding and wading in the river.

Below the Dahlberg Dam and small power station quite a few houses/cabins are present north of the proposed crossing (segment 360). The crossing is at an existing petroleum pipeline and transmission line corridor. There is also considerable development between the crossing and the confluence with the St. Croix River.

Crossing the Eau Claire River at this location (segment 360) would have less environmental and aesthetic impact from the perspective of a canoeist on the river than the proposed crossing on the Oliver 2 Route (segment 363). There is already a transmission line and pipeline clearing and there is already considerable human development visible from the river. This would also connect to the crossing of the Upper St. Croix River that would have the least environmental and aesthetic impact.

**Totogatic River:** The section of the Totogatic River from the Totogatic Flowage to the Minong Flowage (which includes this crossing) is classified by Washburn County as a County Wild and Scenic River. It requires alternate management, similar to that of a National Wild and Scenic River, and is considered an aesthetic zone. The primary objective is to improve and maintain the primitive and undeveloped characteristics of the riverway. Permanent structures, facilities, roads, or other permanent or obvious alterations of the wild state are not permitted within 200 feet of the river. Further, none of the above are permitted outside the 200-foot corridor if it adversely affects the wild state of the river. In general, no cutting of trees is permitted within 100 feet of the river, or within visual distance from water's edge, whichever is less. The Totogatic River is also listed on the NRI for its scenic quality.

The section of the Totogatic River near the proposed crossings is narrow with a steep and rocky bed. The water level fluctuates greatly depending on rainfall and operation of the Minong Dam, but river users are rewarded with views of a wild and secluded riverway.

The Oliver 1 Route crossing of the river (segment 359) is at an existing pipeline and transmission line corridor near a road. The river crossing is not on Washburn County Forest land but it is zoned by the county as resource conservation and would require a conditional use permit. The crossing is located right at the county line between Washburn and Douglas County. In Douglas County this area is zoned as forestry and part of the Douglas County Forest. Douglas County has not given the river any special designation but a conditional use permit would be required.

The applicants propose to have the new transmission line constructed as a double circuit with the existing line, at least where it crosses the river. This would minimize the amount of new ROW needed. There is also a pipeline pumping station at this location, causing even more space constraints. Construction of the line may violate the management objectives of the Washburn



County Forest and Washburn County, depending on whether more ROW would be required. However, use of this crossing may affect those objectives less than the other proposed crossing of the Totogatic River on the Oliver 2 Route (segment 356).

**Namekagon River:** The Namekagon River is one of Wisconsin's best-known canoe streams. Because it was a vital travel route in the pre-settlement period, there is much of historic interest along the river. This area and the river see many visitors because of its proximity to Hayward and the facilities available there. This stretch of the river features a moderate current with several good rapids that are quite exciting and challenging. Shorelines are moderately wild and very scenic.

This part of the Namekagon River has been designated a National Wild and Scenic River as part of the St. Croix National Scenic Riverway. In order to construct a transmission line across the Namekagon River at this location the applicants must receive both construction approval from the Commission and an ROW permit from the NPS. Although this EIS will cover issues critical to the decisions of both agencies, an Environmental Assessment (EA) would still be prepared by the NPS. The NPS process that involves preparation of an EA and possible granting of a permit would not commence until after the Commission makes its decision.

There are two alternative proposed crossings of the Namekagon River (segments 346 and 347) on the Oliver 1 Route. They are south of USH 63 about 6 miles west of Hayward. Both crossings have existing visible infrastructure and are within a few hundred feet of each other. (See Figure 7-3.) One proposed crossing would be at an existing 161 kV transmission line and pipeline crossing. The other crossing would be at the existing rail bridge downstream of the existing transmission line crossing. Because they are so close together, either proposed crossing could be used by any of the Oliver routes. There are also alternative line designs under consideration, including overhead and underground designs. With the underground design option, several different construction technologies are possible. If the project is approved, the Commission could approve one crossing and one technology or it could approve more than one crossing and design and leave the final decision to negotiations between the applicants and the NPS.

Regardless of which location and line design are chosen there would be some environmental impact. Any kind of line will require use of heavy construction equipment on the existing ROW to remove the old line and install the new line. This equipment would cause soil compaction in the ROW. Special procedures to protect the immediate environment from compaction and erosion, especially within a corridor on either side of the river that is owned by the NPS (400 feet on the north and 2,000 feet on the south), would probably be specified by the NPS and the COE as part of any approved permit.

One possible choice would be to install the proposed line underground. The advantage of an underground line is avoidance of the visual impact from the poles and overhead wires. An underground line requires as much cleared corridor as an overhead line. The installation procedure can cause substantial environmental impact. A 345 kV underground line requires placement of two transition stations, to convert the line from overhead to underground and

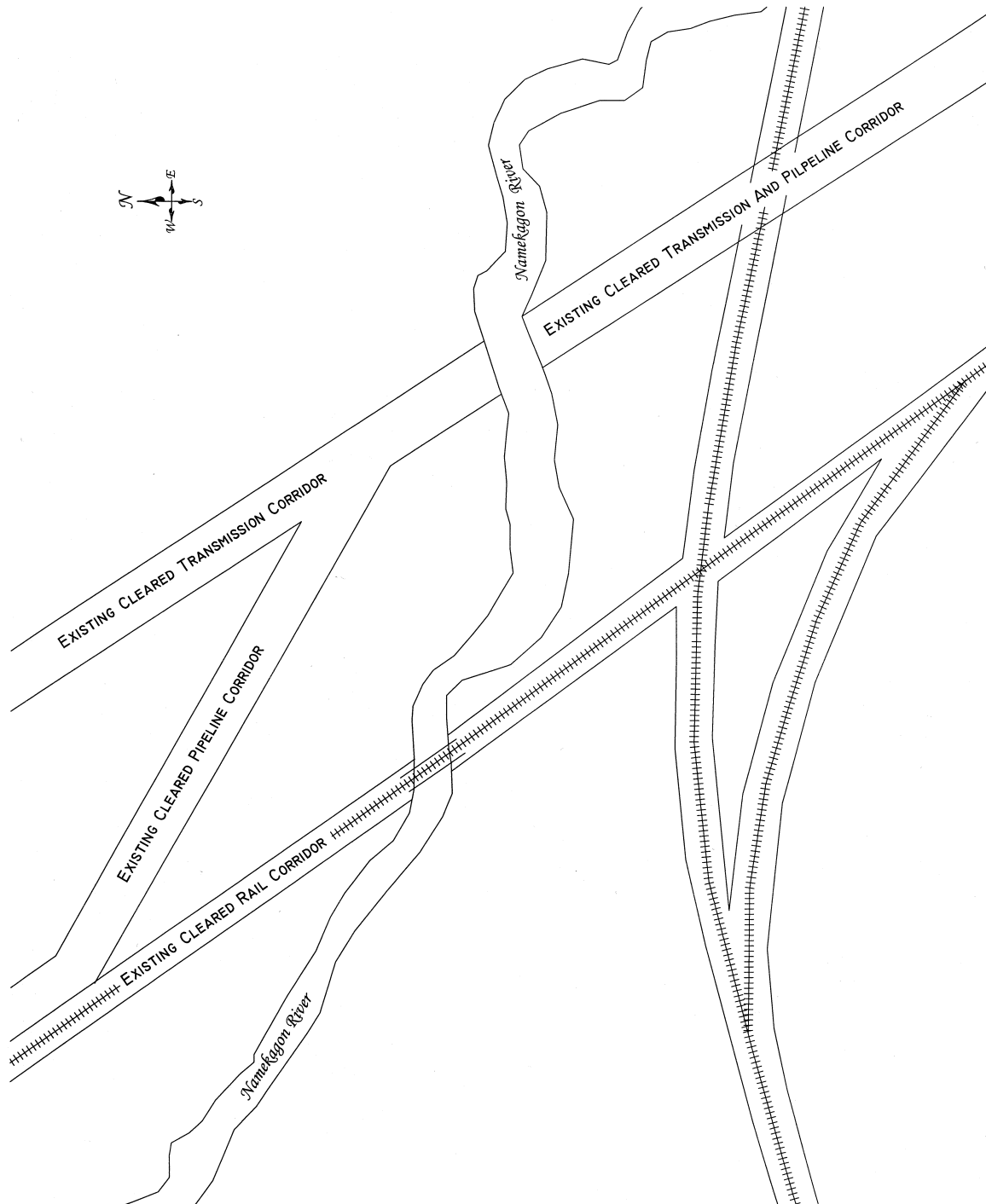
again from underground to overhead. A 345 kV transition station is essentially a substation, requiring about 0.8 acres of cleared land. (See Figure Vol. 2-29.) If high-pressure fluid-filled cables were used, a housing for the pressure pump alarms, controls, and reservoir tanks would also have to be located at each transition station. The transition stations would require permanent access roads for maintenance vehicles. Land for the transition stations and access roads would be purchased from land owners rather than acquiring an easement. The most likely location for an access road for the station north of the river would be off Townline Road.

Laying the cable underground in a trench between the transition station and the river would disturb a continuous strip of ground, rather than the post holes needed every 800 to 1,000 feet for an overhead line. There would be more compaction of soil and more potential for erosion. Directional boring of the transmission line beneath the riverbed would be less damaging than dredging and altering the stream flow to lay it in a trench. During the boring process, however, there is the potential for bentonite leaks that might reduce water quality. In addition, the boring pit sites, about 300 feet from shore, would require removal of some vegetation. (See Chapter 5 Rivers and Streams section for more detail about the impacts related to boring and trenching transmission lines in rivers.)

The benefit of an underground line would be an improved view from the river, but there would be additional infrastructure and land use away from the river, the potential for bentonite leaks during construction, and, if high-pressure fluid-filled cables were used, there would be an ongoing potential for leaks of hydrocarbons into the water or surrounding soils.

If the NPS were to require that the transition stations and pressure housing be outside the park boundaries, these facilities would be placed on private property. Some parties have suggested that the area north of the Namekagon River near USH 63, the existing transmission line, and the pipeline crossing, may be used for other industrial development in the future. There have been such proposals in the past.

**Figure 7-3** Schematic of the proposed Namekagon River crossing, showing the proximity to existing rail and pipeline corridors



The federal mandate with respect to the St. Croix Scenic Riverway, including this portion of the Namekagon River, is to “maintain” or “enhance” the quality of the riverway. The combinations of location and technology choices that are currently being investigated for crossing the Namekagon River are listed below along with a brief synopsis of how well each choice “maintains” or “enhances” the riverway:

**Location: Existing transmission line and petroleum pipeline corridor (segment 346).**

**Technology: Overhead, single pole or H-frame, double circuit (new 345 kV and existing 161 kV).**

If a new overhead line were placed at the existing transmission and pipeline crossings, it would be constructed as a double circuit line on single pole structures. The existing line would be dismantled and removed and the new line would be constructed in the same corridor. The corridor would stay the same width, 100 feet (even though at other locations a double circuit single pole corridor would be widened). The poles would be taller than the existing poles, 125 to 135 feet versus the existing 85 feet. If H-frame double circuit construction were used, the poles could be shorter (approximately 70 feet) but the corridor would be at least as wide as the existing 100 foot corridor. The applicants have offered to plant some low-growing vegetation along the edge of the river to partially screen the cleared transmission line and pipeline ROW. The possibility of creating a berm along the shore to increase the ability of plantings to screen the ROW is also under discussion. The south shore may be too wet to allow creation of a berm.

This option would appear to neither maintain nor enhance the visual/aesthetic condition of the riverway, unless the screening provided by the new plantings along the shore could offset the additional 345 kV wires (three sets of bundled wires) and the fewer but taller, heavier, and darker poles. The applicants have also offered to improve the view at other locations to help offset the aesthetic impact of a proposed overhead crossing at this location. (See a discussion of the mitigation options at the end of this section.) See photo of existing crossing (Figure Vol. 2-21) and a simulation of a new overhead crossing (Figure Vol. 2-30 for single pole construction and Figure Vol. 2-47 for H-frame construction).

**Location: Existing transmission line and petroleum pipeline corridor (segment 346).**

**Technology: Underground – high-pressure fluid filled (HPFF) cable.**

The cable would be trenched and direct laid to the river and directionally bored under the river. The 0.8 acre transition stations with pressure housings would be located about 850 feet back from the north edge of the water and 600 feet back from the south edge of the water.

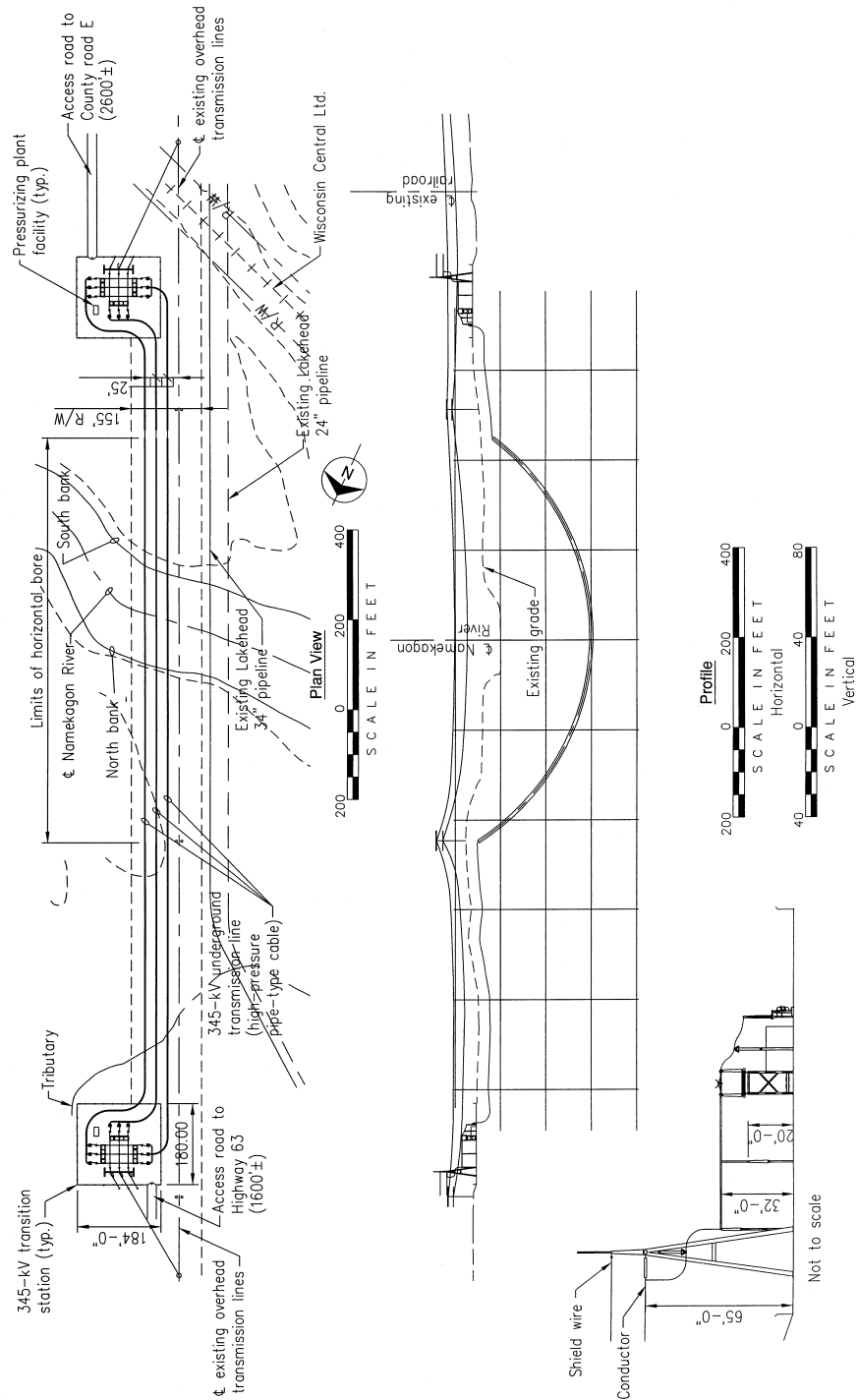
There are at least three ways this option could be implemented:

- 1) Underground only the new 345 kV line. (See Figure 7-4.) The line approaching the river could be double circuit or parallel construction until 600 to 850 feet from shore. At that point, the existing 161 kV line would continue as an overhead line across the river while the new 345 kV line would be connected to a transition station to convert it to an underground design that

would share some corridor with the 161 kV line. There would be three underground cables in order to provide redundancy in the case of failure of one cable. The new transmission line corridor would be 155 feet wide. The above-ground poles for the 161 kV line would be the same height as they are currently. The transition station and pressure housing may be visible from the river (it will be taller than the existing poles) unless some planting or vegetative screening is done around the fenced structures. Even with some medium height plantings the upper part of the transition structure would be visible from the area surrounding the structure. (See Figure 2-29 for a photo simulation of the transition station.) This photo simulation is for a 230 kV line, so a station for a 345 kV line would be slightly larger and taller.

This option could “maintain” the view from the river if minimal new clearing is needed and the transition station is not visible, but it would not “enhance” unless plantings at the shore can further obscure the existing line and ROW or enhancement is done at other locations on the river. The overall environmental impact from trenching and boring could be greater than installing an overhead line and the land use impact 600 to 850 feet from the river would be greater because of transition stations and access roads. There would be a long-term potential for environmental contamination from fluid in the pressurized cable.

**Figure 7-4** Footprint and cross sectional schematic of the Namekagon River crossing if the new 345 kV line is underground and the existing 161 kV line remains overhead



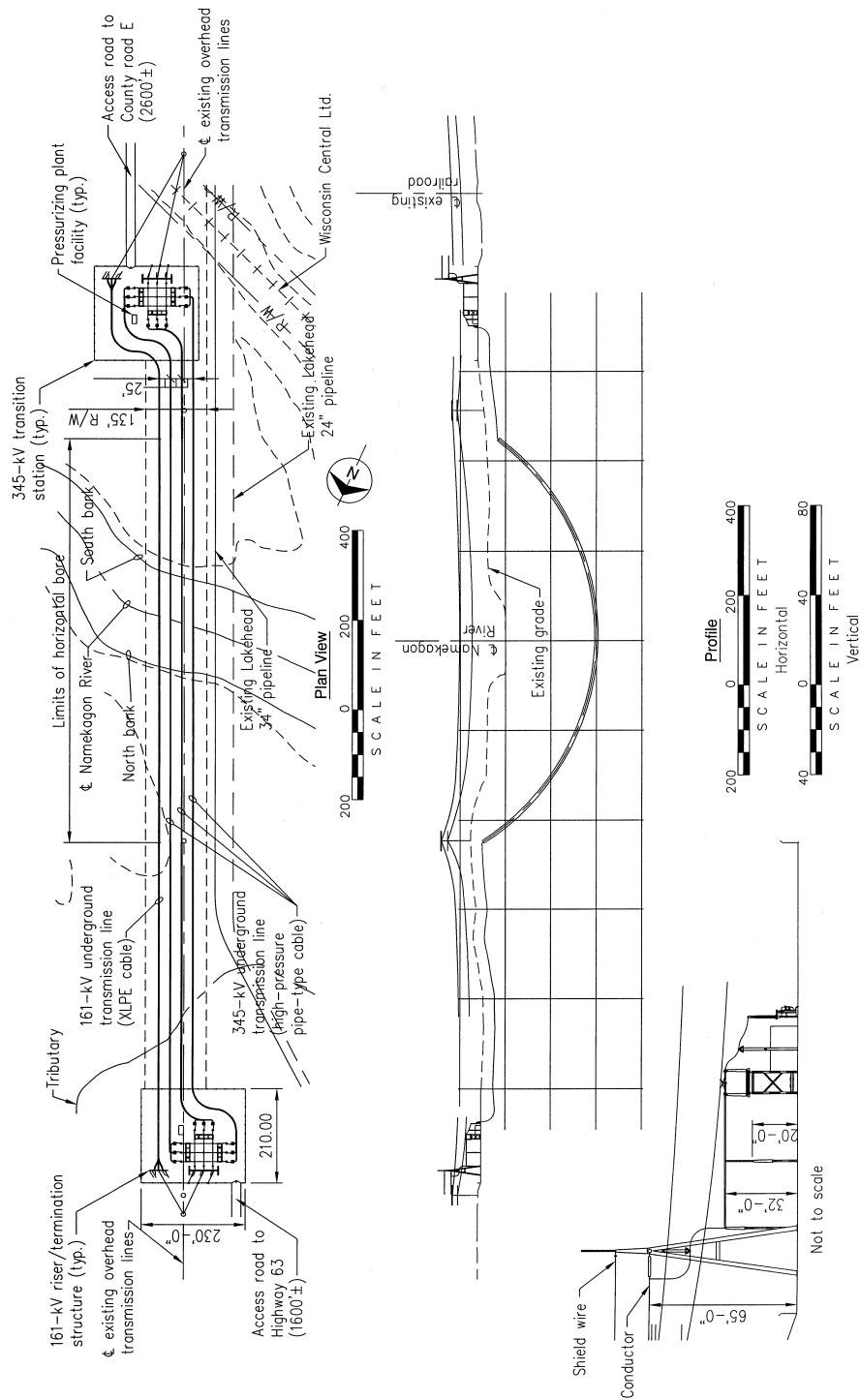
2) Underground both the existing 161 kV line and the new 345 kV line. (See Figure 7-5.) The line approaching the river could be double circuit or parallel construction until 600 to 850 ft from shore. At that point, the existing 161 kV line and the new 345 kV line would be connected to a transition station to convert them to an underground design. The cable lines (three for the 345 kV line and one for the 161 kV line) would be side-by-side and the new transmission line corridor would be 135 feet wide. No overhead poles would be visible from the river. The transition stations would have to be larger to accommodate the transition of two lines. The 161 kV line could be done with extruded dielectric cable and would not require additional pressure housing. The transition stations, which would be taller than the existing poles, may be visible from the river unless more planting is done around the fenced structures. Even with some medium height plantings the upper part of the transition structure would be visible from the area surrounding the structure. There would be more trenching and boring required, increasing the potential for disturbance, erosion, and leaking of oil.

This option would “enhance” the view from the river. There would be no wires and the corridor would be wider but easier to screen. The overall environmental impact from trenching and boring could be greater than installing an overhead line and the land use impact 600 to 850 feet from the river would be greater. There would be continued potential for environmental contamination from fluid in the 345 kV pressurized cable.

3) Underground only the new 161 kV line. (See Figure 7-6.) The line approaching the river could be double circuit or parallel construction until 600 to 850 feet from shore. At that point the new 345 kV line would continue as an overhead line and the existing 161 kV line would be connected to a transition station to convert it to an underground line. If the underground line can be placed within the 345 kV ROW, the corridor at the river would be visually unchanged from current conditions. The above-ground poles for the 345 kV line would be slightly taller than the existing structures. The transition station would be much smaller than if the 345 kV line were underground, so it probably would not be visible from the river. Extruded dielectric cable could be used so there would be no pressure housing and there would be no potential for fluid leaks.

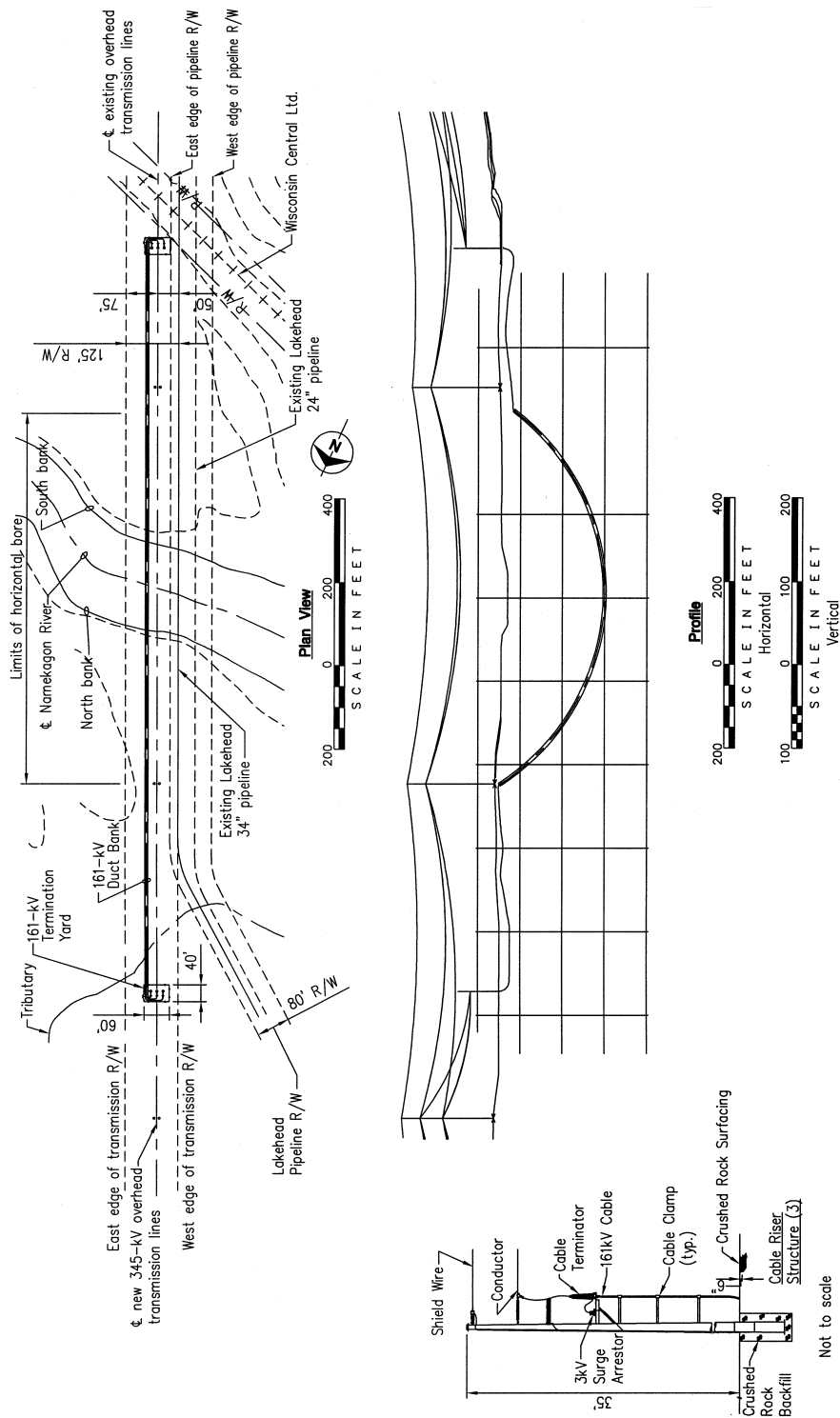
This option would be more likely to “maintain” the view from the river if the wires used for the 345 kV lines were single wires instead of bundled conductors, and the corridor would not need to be widened. But it would not “enhance” the current conditions unless plantings at the shore can further obscure the existing line and ROW or enhancement is done at other locations on the river. The overall environmental impact from trenching and boring could be greater than installing an overhead double circuit line and the amount of land impacted 600 to 850 feet from the river would be greater. Use of H-frame construction would allow shorter poles but require a wider corridor. (See Figure Vol. 2-48.)

**Figure 7-5** Footprint and cross-sectional schematic of the Namekagon River crossing if the existing 161 kV line and the new 345 kV line are both underground





**Figure 7-6** Footprint and cross-sectional schematic of the Namekagon River crossing if the existing 161 kV line is underground and the new 345 kV line is overhead



**Location:** Existing transmission line and petroleum pipeline corridor (segment 346).

**Technology:** Underground – extruded dielectric cable for the 345 kV line or for both lines.

The impacts from this option would be the same as described in option 1 above except there would be no need for a pressure housing at the transition station and no potential for soil or water contamination from leaking fluids. The impacts on the land needed for the transition stations would be less. There are some indications that a solid dielectric line would be less expensive and have fewer electrical losses. There has been no experience in the U.S. with this technology at this high a voltage, but there have been several installations at 161 kV. The track record in Europe for 345 kV has been good and the Commission is currently considering a proposed 345 kV installation in Wisconsin.<sup>197</sup>

**Location:** Existing rail bridge (segment 347).

**Technology:** Overhead.

There was a proposal to move the existing 161 kV line from its current location and to reinstall it as a double circuit with the new line, at the existing rail bridge a few hundred feet north. The line could have been placed upstream or downstream of the existing bridge.

Further investigation of this option has revealed some potential problems. Curves in the river just above and just below the rail bridge would have required all trees to be cleared for 500 to 600 feet along the river shoreline, regardless of which side of the bridge is chosen.

This option would not have “maintained” or “enhanced” the view from the river. NPS comments on the draft EIS requested that the option be dropped because of the extensive clearing required and the subsequent visual impact on the riverway.

Some other options exist for mitigation of adverse impacts, especially visual, at other locations along the Scenic Riverway. They include:

- Underground some existing distribution lines crossing the Scenic Riverway (even lines owned by other utilities). Distribution lines are much easier to place underground than transmission lines. This would remove some existing overhead visual impact on the Riverway in exchange for the new overhead transmission line.
- Make the ROW appearance less severe at other locations, using intermediate height plantings to soften the straight edge of the corridors and improve visual quality.

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<sup>197</sup> Proposed by Badger Generating, a subsidiary of PG&E Generating, to be installed as a connecting line to a proposed plant near Kenosha, WI.

- Buy more land for the NPS near this crossing to provide a wider riverway corridor as a buffer, since there are some plans locally to develop this area into an industrial park/area.

**Benson Creek:** Benson Creek is a small Class I brook trout stream in southwest Sawyer County. Its headwater is a spring area near the junction of CTH F and Summit Lake Road. It flows 1.8 miles, first north, then west and then south to Lake Chetac. Over half of the length of the creek is in the fishery area. The stream has an estimated normal flow of 6 cubic feet per second, an average width of 7 feet and a gradient of 33 feet per mile. The water quality is well suited for trout: cold, medium hard, with a neutral to slightly alkaline pH. Silt and sand are the major substrate. The headwaters are bordered by a sedge marsh and the rest of the stream by upland or shrub marsh. Seven spring ponds are located on the drainage, five small spring ponds drain into the stream, and the two larger ones are part of the stream channel proper. The largest, Benson Springs, covers about 1.8 acres, has a maximum depth of 5 feet, and a mean depth of about 1.5 feet. Segment 324 as originally proposed would cross Benson Creek twice, once over open water near the headwaters, and again downstream of Benson Springs. A cleared corridor through this area may damage the quality of the trout stream. Avoiding damage to the stream or wetlands would be a difficult engineering feat, and construction across this stream would be incongruous with its present use and appearance. The applicants have proposed a new segment (324a) that moves the proposed line further south to avoid this area.

### Wetlands

Although the importance of wetlands is not always obvious to the casual observer, they serve several vital functions that benefit society. Wetlands store storm water runoff, enabling the recharge of groundwater sources. Wetlands filter sediments and pollutants from the air, precipitation, and upstream sources, resulting in higher water quality in downstream water bodies and rivers. Wetlands provide food, cover, and nesting habitat for many species of fish and wildlife. This special habitat could be destroyed or damaged by development of ROW in a wetland, especially a wetland with no existing corridor. Power line structures and conductors can also pose a collision hazard for sandhill cranes, waterfowl, and other large water birds that frequent wetlands, especially under low light conditions or in poor weather. For these reasons it is important to know how wetlands would be affected by construction of this project.

The wetland impacts of the Oliver 1 Route will vary depending on whether the line is constructed as a double circuit line or parallel to an existing line. The parallel construction option would affect almost three times as much wetland area.

**Table 7-2      Line design and wetland area affected by the Oliver 1 Route**

Double circuit	48.5 acres of new non-forested wetland
Parallel construction	139.5 acres of new non-forested wetland

For analysis purposes, forested wetland impacts were analyzed and are discussed under the Forest section rather than in the Wetlands section. It is important that the impacts not be double counted. When considering the total wetland impact of the Oliver 1 Route, the non-forested and forested wetland impacts should be added together.

If the line were double circuited on the Oliver 1 Route, 30.5 acres of new forested wetland would be affected. Adding this to the new non-forested wetland impact would result in 79 acres of total new wetland impact. If parallel construction were used on the Oliver 1 Route, there would be 91.5 acres of new forested wetland affected for a total of 231 acres of new wetland impact.

Affected area, of course, is not the only consideration of wetland impact. Quality of the wetland is also important. Information about the sensitivity or quality of wetlands was obtained from DNR and County Forest staff, local landowners, and site visits. However, due to the great number of wetlands and limited access in some areas, little is known about the quality of many of the wetlands along the route.

If the proposed route is a new corridor (no existing infrastructure), there may be a greater potential that the wetlands are higher quality. Similarly, if existing corridors have not been disturbed for many years, previously disturbed wetland areas could have recovered to their former quality. The Oliver 1 Route is primarily on existing corridors, often transmission line corridors, that are maintained on a regular basis. The Oliver 1 Route has only 0.8 mile of non-forested wetland on the proposed corridor where no infrastructure existed before. This may be one reason that there are fewer known sensitive wetlands on this route than on the Oliver 2 Route.

The size of a wetland and its location in relation to the proposed centerline also affect the potential for impact. Wetlands that measure less than 800 feet along the ROW allow for placement of poles at either end of the wetland. The Oliver 1 Route has at least 19 wetlands (forested and non-forested) that are wider than 800 feet, making it difficult to construct a 345 kV transmission line without placing at least one pole in the wetland. Placing poles within a wetland requires that construction equipment get to the pole site. The equipment can get to those locations by using the existing or newly developed corridor through the wetland as a temporary road. Another option would be to build temporary roads into the wetland from the nearest existing road. If the wetland is long and narrow along the corridor this approach would disturb less wetland. Building temporary roads, however, causes environmental damage. Soil could be compacted and there could be decreased hydrologic function if fill is used to construct the roads. Soil disturbance and compaction can encourage proliferation of nuisance or non-native species. Building roads in wetlands could trigger the need for a Section 404 COE permit. Road construction would be subject to the same requirements as pole placement in wetlands.

Accessibility of the wetlands also affects the amount of impact. If there are several wetlands in an area with no roads between them, it may be necessary to drive through one or more wetlands on the corridor to get to the next wetland. Again, temporary roads could be constructed from

nearby roads to access each isolated wetland, but often, where there is a string of wetlands with no roads in between, there are few other roads nearby.

Moving construction equipment through wetlands can substantially damage the wetlands. Heavy machinery used for clearing trees and brush, drilling holes, hauling cement and setting poles can crush wetland vegetation and compact wetland soils. Soil compaction reduces the water-holding capacity of the soil and may result in increased runoff. Compaction would also interfere with the filtering capacity and could cause a change in the water flow through the area. A change in the water flow could change the size or type of the wetland. The applicants could be required to construct in wetlands only when the ground is frozen, to use matting under equipment in all wetlands, to restore the wetland to its original condition, including replanting of some areas, and to use special techniques to prevent transport of undesirable species from one location to another. The Commission can require mitigation procedures as part of its approval process.

The section on Water Resources in Chapter 5 has a description of the state (DNR) and federal (COE) laws that protect wetlands, the types of wetlands that are eligible for special consideration, and how the formal permitting process would work. It also describes the additional authority of the Commission to protect water resources.

#### **Inaccessible wetlands**

There are about 10 to 12 inaccessible wetlands (forested and non-forested) on the Oliver 1 Route. They are grouped at two locations. One location is just south of Superior, near CTH Z and Lyman Lake Road (segment 392). This is a short section of new corridor through an area of wetlands considered high quality by the DNR. Digitized wetland inventory data indicate the presence of seven wetlands near the crossing of Bear Creek with no roads between them.

Another location is south and east of the town of Stone Lake along the Wisconsin Central Railroad corridor (segment 328). Available data identify seven wetlands, including a tamarack and spruce swamp, that may be more than 800 feet across. There are no roads in the area.

#### **Sensitive wetland areas**

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) may take longer to recover than other types of wetlands containing emergent vegetation. The Oliver 1 Route crosses 1.7 miles of sensitive wetland but all are located on ROW with existing corridor (mostly existing transmission lines). The largest concentration of sensitive wetlands is on segments 367 (0.9 mile) and 360 (0.3 mile). Avoidance of the area or requiring the most effective mitigation techniques could be warranted. See Chapter 5 for more information about sensitive wetlands. Since the main issue is long-term recovery, there may be less impact on this route than on the Oliver 2 Route, where there is only 0.7 miles of sensitive wetland, but it is all on new corridor. The corridor on this route has already been disturbed and may not yet be recovered, while the proposed corridor on the Oliver 2 Route has never been disturbed.

**High quality wetlands**

There are nine wetland (forested and non-forested) areas that are considered high quality, sensitive, or are associated with OEWR. These include:

- The inaccessible forested wetland area near CTH Z and Lyman Road (segment 392 – new corridor).
- Forested and scrub/shrub wetlands west of the Pokegama River on segment 393 – a very large, relatively intact, wetland that is known habitat for several NHI listed plant species.
- Two significant bird areas noted by the Nature Conservancy. These areas support high numbers of breeding pairs of rare and nongame birds, and the sites are believed to be important to the long-term conservation of the birds (segment 372 – existing transmission line).
- A 4,000-foot wide ericaceous shrub wetland just northwest of Gordon on segment 367.
- An endangered plant has been observed south and west of Solon Springs, near the proposed crossing of Leo Creek, on Douglas County forest land (segment 367 – existing transmission line).
- About 2,000 feet of muskeg wetland about one half mile north of the proposed Totogatic River crossing about two miles west of USH 53 and just north of the Washburn/Douglas County line (segment 360 – existing transmission line). This wetland was measured by Douglas County forestry.
- The Totogatic River is classed as a Wild and Scenic River by Douglas County. The wetlands within 200 feet near the proposed crossing would have the same status and require special treatment. The crossing is located at the Washburn/Douglas County line (segment 359 – existing transmission line).
- The DNR and Washburn County are cooperating to protect the Lost Lake Wetland, considered high quality and prime habitat for eagle, osprey, and wolf. This wetland is a large conifer swamp with black spruce and tamarack that surrounds a 41-acre soft-bog lake. The vegetative structure varies from dense pole-sized spruce, to semi-open muskeg, to open bog. It shows little evidence of past disturbance and is listed as excellent quality in the NHI for communities. It is located west of County M near Lost and Sugarbush Lakes (segment 357 – existing transmission line).
- A small forested wetland just north of the Namekagon River crossing. The Namekagon is an ORW and part of the St. Croix National Wild and Scenic River system (segment 346 – existing transmission line).
- Two miles south of the Namekagon River, this route passes through some scrub/shrub and emergent wet meadow wetlands between the Bean Brook State Wildlife Area and the Flat Creek State Wildlife Area (segment 341 – existing transmission line).

- Several scrub/shrub wetlands and springs where the proposed corridor crosses Benson Creek near the southwest corner of the LCO Reservation. See the description of the Benson Creek Wildlife Area in the section on other county, state, and federal land on this route later in this chapter. The wetlands are accessible but this is a new corridor and Benson Creek is listed as an ORW (segment 324a - new corridor).

Construction of a transmission line through these wetlands and probably others could require special construction techniques, careful placement of poles, mitigation of any impacts, and perhaps purchase of new high quality wetland properties, given the protected status of these areas, to compensate for the loss of prime wetland.

### Forests

Forests provide recreational opportunities, wildlife habitat, heating fuel, habitat for rare plants and animals, timber, and pulp for the paper industry. Building this high-voltage power line would require clearing many acres of trees and shrubs. Depending on where it occurs, this clearing could cause general loss and degradation of wooded habitat, pulp and timber losses, and forest fragmentation.

Degradation can occur when invasive species are carried into a forest inadvertently by construction equipment and when soil and light conditions are altered so as to encourage growth of weedy species. This can result in a loss of plant and animal diversity. Trimming and clearing of trees at certain times of the year can also contribute to the spread of disease.

The production of trees for pulp and timber use is an important industry in northwestern Wisconsin. Because transmission line ROWs must be kept clear of woody vegetation that grows taller than 10 to 12 feet, the area within the ROW would be permanently lost as a site for pulp and timber production. (See Chapter 5 for more information about impacts to forests.)

The following table summarizes the amount of forest impact for the Oliver 1 Route. Because in many areas there is potential for either double circuit or parallel construction, the data are presented for both options. If there is a mix of double circuit and parallel construction the amount of area affected could be somewhere between the two options noted.

**Table 7-3 Forest impacts for the Oliver 1 Route**

	Double Circuit	Parallel Construction
New* wetland forest crossed (miles)	0.8	0.8
New* upland forest crossed (miles)	10.7	10.7
<b>Total New Forest Crossed (miles)</b>	<b>11.5</b>	<b>11.5</b>
Wetland forest cleared (acres)	30.5	91.5
Upland forest cleared (acres)	386.5	629.5
<b>Total Forest Cleared (acres)</b>	<b>417</b>	<b>721</b>

\* No corridor currently exists of any kind.

Area (acres) of affected land varies for different construction techniques (double circuit or parallel). Double circuit construction requires 0 to 20 feet of additional ROW width, while parallel construction can require up to 120 feet of ROW. The acres shown here include acres that would have to be cleared to widen an existing corridor as well as acres of new corridor where none existed before. Where there is no existing corridor (11.5 miles of Oliver 1), the new corridor would be 120 to 150 feet wide, depending on the pole type.

### Forest fragmentation impact

An analysis of the forest fragmentation potential on the Oliver 1 Route was completed as described in Chapter 6. Eleven blocks of forest larger than 1,000 acres and with forest/forested wetland cover greater than 70 percent were identified along the Oliver 1 Route. In three of those blocks, the Arrowhead-Weston line would create a new corridor (see Table 7-4), fragmenting a large portion of the forest block. All three of the identified blocks are on the part of the Oliver 1 Route that avoid the LCO Indian Reservation. The analysis for the Oliver 3 Route shows the forest fragmentation potential for a transmission corridor sited through the LCO reservation. The summary in Chapter 12 has a comparison of the forest fragmentation potential of all three routes.

**Table 7-4 New ROW fragmentation on the Oliver 1 Route**

Block #	Segment #	Size (acres)	% Cover	Primary Types
10	324	4,500	88%	Aspen, oak, and other deciduous
11	324	2,700	87%	Aspen, oak, and other deciduous
12	324	9,400	91%	Aspen, oak, and other deciduous

Table 7-5 also identifies eight blocks greater than 1,000 acres with greater than 70 percent forest/forested wetland coverage that already have some type of corridor along the proposed Oliver 1 Route. These blocks would be affected less by fragmentation than the blocks requiring a new corridor. In these blocks the existing corridor already “fragments” the block, but a wider corridor has the potential to incrementally affect the forest block. There may be some species present that are not sensitive to the fragmentation caused by the existing corridor width but would be affected by a wider corridor. The amount of incremental impact cannot be determined without a much more detailed look at existing habitats and species.

Further analysis of forest fragmentation potential was done using a smaller forest block size of 200-1000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential greatly increases when clearing ROW through these smaller forest blocks is considered. At least 10 blocks of this size exist on this route.<sup>198</sup> While forest blocks greater than 1000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200-400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

<sup>198</sup> These blocks are mutually exclusive of the 1000 acre+ blocks and thus have not been double counted for this analysis.



Only one of these blocks would require creation of a new corridor; the potential for fragmentation on the other nine would be incremental due to the presence of existing infrastructure in the corridor.

**Table 7-5 Existing ROW with potential for incremental fragmentation on the Oliver 1 Route**

Block #	Segment #	Size (acres)	% Cover	Primary Types
2	372*	1,000	84%	Aspen and other deciduous
3	372*	1,000	81%	Aspen and coniferous
4	372*	1,000	82%	Aspen and other deciduous
7	357	9,100	91%	Aspen and other deciduous
8	357	10,000	83%	Aspen and mixed deciduous/coniferous
12	323, 316	9,400	91%	Aspen, oak, and other deciduous
16	316	2,300	80%	Aspen and other deciduous
18	314, 311	2,000	88%	aspen and other deciduous

\*Only incremental fragmentation if the line is constructed parallel rather than double circuit.

### Industrial forest

There are two areas on the Oliver 1 Route that have concentrations of industrial forest. This is corporate owned and operated forest production, primarily chipping or pulping for paper products. One area with a concentration of industrial forest, primarily owned by Georgia Pacific Papers (Nekoosa) and Wausau Mosinee Papers Corporation (Mosinee), is along the proposed route in Douglas County, north and south of Solon Springs and Gordon. Proposed segments along the Oliver 1 Route cross 2.25 miles of industrial forest in Douglas County. A second area where there is a concentration of industrial forest is in Sawyer County between the LCO Reservation and Exeland. Here the industrial forest is primarily owned by Futurewood Corp. Proposed segments along the Oliver 1 Route cross 4 miles of industrial forest in Sawyer County. (See Chapter 5 for an explanation of the impacts on industrial forest.)

### Wildlife

The proposed transmission line can impact wildlife through direct harm to some species and by altering the suitability of wildlife habitat. Construction activities can be noisy for a long enough period to discourage nesting or burrowing. Machinery and workers could crush vegetation that provides food, nesting sites, and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats of stream fauna. ROW clearance and line construction near lakes, rivers and streams can cause damage to fauna habitat from erosion and siltation. Transmission line corridors can fragment habitat by converting woodland to shrub and grassland (see the Forest section for information on forest fragmentation) or degrade habitat through introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near rivers and streams can drift or run off, polluting the water. Transmission line conductors, structures, and associated guy wires pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Oliver 1 Route are described below.

The timber wolf is classified as a threatened species in Wisconsin. In central Douglas County, the Oliver 1 Route crosses the edge of the territory of the Moose Lake Pack on an existing transmission line corridor. In northern Washburn County, the Oliver 1 Route crosses through the middle of the territory of the Frog Creek Pack on an existing transmission line and rail corridor. Timber wolves tend to avoid areas of human activity. Transmission line construction activity could drive the wolves away from this part of their territories, at least during the construction phase. Wolf pack dens tend to be within the interior 25 percent of each territory, on high ground within a wetland complex, and usually at least one kilometer from an improved road. The Oliver 1 Route is near the center of the pack territory but, because of the presence of the existing railroad corridor, the den would be more likely to be located at a distance from this route, possibly near the Oliver 2 Route, about 1.5 miles to the east.

The Oliver 1 Route crosses several rivers and wetlands that support threatened and endangered species, including mussels and plants. Impacts to these species could be avoided if construction equipment does not enter these rivers or wetlands and if proper erosion control measures are implemented. Specific impacts on aquatic species in streams and wetlands, including threatened and endangered species, will be determined by DNR. If the applicants file for a permit to cross a stream, the DNR will determine the need for further review for the presence of aquatic threatened and endangered species under Wis. Stat. § 30.29. If the applicants are required to get a Section 404 COE permit to cross wetlands, then the DNR will determine the need for further review for the presence of threatened or endangered species under Wis. Admin. Code ch. NR 103. If necessary, the DNR can deny a permit or require mitigation procedures to protect any threatened or endangered species. (See Chapter 5 for more detailed explanations of the wetland and stream permitting processes.)

Bird strikes are also a concern where the line would span rivers. Bald eagles and osprey were observed on the Eau Claire, St. Croix and the Namekagon Rivers and could be present at many other locations within the project area. These birds are listed on state or federal threatened and endangered species list. Rivers and their associated wetlands can also serve as corridors for daily and migratory flights by birds. There are two significant bird areas, identified by the Nature Conservancy, located on the Oliver 1 Route. These areas support mating pairs of rare game and non-game birds and are considered important to their survival. One area (Black/Belden Swamp-Bear Lake) is north and west of Solon Springs and the other (Brule-Jack Pines) is south and northeast of Solon Springs. Also, the Douglas County Wildlife Area near Solon Springs is a higher, drier area managed as sharptail grouse habitat. The proposed route follows an existing transmission line corridor through all of these areas but if this route were used for the new line, there would be more and possibly taller structures and lines than at present. Placing markers on the wires of transmission lines in well known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with lines.

The wood turtle, a state-threatened species, has been observed in the Namekagon River and St. Croix River. Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction near the river during the egg laying and hatching period from June to late September.

There have been sightings of Canada lynx in northwest Wisconsin. Any elevation in the level of human access into a forest where lynx are present is a significant threat to their viability. Any increased likelihood of lynx encountering people (such as new access corridors) could result in displacement from their habitat or possible injury or death by intentional or unintentional shooting, trapping, or vehicular accident. Changes in the forest habitat that encourage the presence of bobcats and coyotes will decrease the lynx population.<sup>199</sup>

Table 7-6 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. As noted above, more surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

**Table 7-6 Threatened and endangered species for the Oliver 1 Route**

Scientific Name	Common Name	State Status*
<i>Pandion haliaetus</i>	Osprey	THR
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federal END)
<i>Dendroica tigrina</i>	Cape May warbler	SC/M
<i>Carduelis pinus</i>	Pine siskin	SC/M
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Canis lupus</i>	Timber wolf	THR (federal END)
<i>Lampsilis teres anodontooides</i>	Yellow sandshell mussel	END
<i>Petasites sagittatus</i>	Arrow-leaved sweet-coltsfoot	THR
<i>Ranunculus cymbalaria</i>	Seaside crowfoot	THR
<i>Ranunculus gmelinii</i>	Small yellow water crowfoot	END
<i>Parnassia palustris</i>	Marsh grass-of-parnassus	THR
<i>Eleocharis nitida</i>	Slender spike-rush	END
<i>Sparganium glomeratum</i>	Northern bur-reed	THR

The following protection categories are designated by the DNR: END=endangered, THR=threatened. SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

## Local community impacts

### Land use

Thirty-six percent of the Oliver 1 Route is located on public land of some kind. About 30 percent (28 miles) traverses county forest land while 3 percent (about 2.6 miles) is on state-owned land. The other 3 percent (2.6 miles) crosses other types of publicly owned land such as

<sup>199</sup> USFWS Proposed Rule, Canadian Lynx, Federal Register: July 8, 1998, Volume 63, Number 130, Part II, Page 36993-37013.

county parks or federally managed land. Some sections of the proposed route cross areas with zoning that would require a permit before building a transmission line. There are also several recreational trails and protected areas that may be affected by the proposed line. All of these subjects are discussed in more detail below.

### **County forest plans**

The Douglas, Washburn, and Sawyer County Forestry departments each have a 10-Year Land Use or Comprehensive Management Plan as well as an Outdoor Recreation Plan. These plans were reviewed to determine if and how the proposed transmission line would affect the plans. Local forest staff identified special use areas or ecological communities that might need special consideration if the Oliver 1 Route is approved.

#### **Douglas County Forest**

Easements and leases for the construction of transmission lines are subject to approval by the Douglas County Forest Parks and Recreation Committee. Electric utilities or cooperatives are encouraged to use existing corridors rather than develop new corridors. Underground installations are encouraged. Forest users should minimize damage to resources and aesthetics. The committee also addresses special maintenance or controlled access concerns, such as use of matting in wetlands or development of new roads.

Almost 15 miles of the Oliver 1 Route are on Douglas County forest land. Through these forested lands, the route is, almost entirely, on or adjacent to existing corridors. In general, Douglas County Forest staff did not identify any special use areas or special communities needing protection during or after construction of the proposed transmission line. There are several streams and rivers crossed within the Douglas County Forest, but they are all crossed along existing corridors, usually a rail corridor. If the proposed project is approved, forestry staff would expect the use of BMP to protect resources on any county forest land and would monitor construction to ensure use of these practices.

No permits for construction of new cabins have been issued for several years and all existing permits are being phased out. Existing cabins on county forest land are to be vacated as soon as practical, but no later than the year 2000. For this reason, the proposed line would have no impact on privately held cabins within the Douglas County Forest.

#### **Washburn County Forest**

The Washburn County Forest Plan is a well-developed plan that breaks the forest into 30 units. Each unit has a plan describing and mapping the existing resources (flora, fauna, topography, geology, roads/trails, archeological/historical, etc.) and proposed uses (harvesting/preservation) for these resources. Several of the forest units are designated non-motorized units. Visitors may not use motor vehicles of any kind in the unit. Logging contractors who have been granted a contract to cut timber, however, are allowed to use motor vehicles. Motor vehicles could also be used to construct a transmission line but the contractors would be required to use the same environmental protection practices required of logging contractors. These requirements include use of BMP.

Almost 10 miles of the proposed Oliver 1 Route are on Washburn County forest land. Forest units affected by the proposed Oliver 1 Route are described below.

On the north edge of Washburn County near CTH G is the De Rosier Unit (3) of the Washburn County Forest. This unit is designated a non-motorized unit. Segments 357 and 359 cross this forest unit along an existing transmission line and rail corridor. The proposed 345 kV line would cross the Totogatic River in the northwest corner of the forest unit. The line would be double circuited with the existing 161 kV line at and near the river crossing but could be double circuited or built parallel to the existing line across the rest of the unit. There are no other developed recreational assets that would be affected by the proposed line in this forest unit. The existing transmission line ROW would have to be widened 20 feet to accommodate a double circuit line. If the new 345 kV line is built parallel to the existing line an additional 120 to 150 feet of ROW clearing would be needed.

The Oliver 1 Route also affects four additional units (8, 11, 19a and 30) of the Washburn County Forest as it follows the existing transmission line and rail corridor through the forest. These units have fewer use restrictions than the De Rosier Unit (3). In unit 8, the route crosses a trail that is used only in winter. Unit 11 is the Lost Lake unit. An area of this unit has been considered for designation as a State Natural Area. A survey, commissioned as part of this project review, did not, however, identify any occurrences of a proscribed list of rare plant species. Washburn County Forest staff reports use of the area for cross-country skiing although there are no developed trails in this unit. No specially designated recreational uses would be affected by the proposed line in units 11, 19a, and 30.

#### **Sawyer County Forest**

The Sawyer County Forest 10-Year Plan assigns administration of the County Forest to the Conservation Committee. Easements for public utilities must be considered by the Committee but are forwarded to the County Board for final decision. Underground installations for electric lines are encouraged. The Committee would also address any special maintenance or controlled access concerns, such as use of matting in wetlands or development of new roads.

The Oliver 1 Route, as proposed, would affect one unit of the Sawyer County Forest. A 3.6-mile section of the route (segment 324) west of County F and east of Sissabagama Lake crosses county forest land. No special use areas or special communities have been identified, but forest personnel expect and would monitor for strict use of BMP on county forest land affected by construction of the transmission line. BMP are used by logging operations and would be expected of any entity building a transmission line or associated access roads through county forest land.

#### **Other county, state, and federal land**

East of Lyman Lake Road and south of County Z the Oliver 1 Route (segment 385) skirts the edge of some County Mitigation land for 1.2 miles.

Southwest of Solon Springs is the Douglas County State Wildlife Area. Some of the land is owned by the DNR, some by the county. The Oliver 1 Route, as proposed, would run along the east edge of the wildlife area, just outside the boundary at some locations and just inside the

boundary at others. The route would follow the existing transmission line corridor except for a 1.5-mile section that was moved west to meet safety requirements for the Solon Springs airport runway. The wildlife area is managed primarily as a bird sanctuary where hunting is allowed. Sharp-tailed grouse habitat protection is one of the main objectives of the management plan but many other bird and animal species are also present. There are multiple recreation trails with multiple uses located on or near the ROW. There are also hunting dog training facilities and trails. If this route is approved there may be requirements to mitigate bird/wire collisions. Further investigation of the potential impact on birds for parallel construction versus double circuit may be needed before a decision can be made about the best line design to use at this location. Because the new line is proposed to follow an existing transmission and pipeline corridor, most other uses would not be adversely affected except for an incremental visual/aesthetic impact.

Near the southwest corner of the LCO Reservation, the route (segment 324) crosses the Benson Creek State Fishery Area where there is currently no infrastructure. This segment was developed as a cross-country alternative to using the existing pipeline and transmission line corridors that cross LCO Reservation land. The wildlife area is small but very wild and undeveloped. It is managed to preserve and protect the Benson Creek Fishery Area, in order to enhance trout fishing and other recreational activities. Benson Creek is designated a Class I (the highest grade) trout stream. More information on the creek can be found in the section on rivers and streams. The recommended wildlife management program includes management of uplands for forest game and erection of nesting structures for waterfowl, raptors, and cavity dwelling birds. The proposed route would cross the stream below Benson Creek Springs and would also cross the headwaters area of the creek. Because the proposed route is so close to the edge of the Benson Creek Fishery Area, it may be possible to adjust the location (segment 324a) to avoid the area. This might result in more impact on private landowners, however.

At the northern edge of Rusk County, three miles east of Hwy 40, the DNR owns 118 acres of land, Weirgor Springs Wildlife Area, which would be crossed by the Oliver 1 Route (segment 311). This route would use an existing transmission line corridor. The primary purpose for establishing this wildlife area was to protect the Weirgor watershed and provide a high quality public fishery. Little Weirgor Creek is a Class II trout stream.

The federal government owns some land on both sides of the Namekagon River, as part of the St. Croix National Scenic Riverway. NPS manages the Riverway and has jurisdiction over any development within the Riverway. The location and line design of any transmission line crossing the Namekagon River would require an easement agreement from the NPS. (For specifics about impacts see the section on rivers and streams.)

### **Recreation trails**

The north end of the Little Douglas County Recreation Trail, which is an abandoned rail bed, is in a rail yard at the end of Pokegama Road south of Hwy 105. The Oliver 1 Route (segment 393) parallels an existing rail corridor that is perpendicular to the end of the trail. The trail is designed for winter vehicle (snowmobile) use only. Gates at the road crossings and signage prevent other motorized vehicle use. The trail is also used by hunters traveling on foot.

Although the trail currently ends at the rail yard, Douglas County is attempting to connect the trail with other existing trails in the area. In the vicinity of the proposed trail crossing there is currently no existing infrastructure visible from the trail. There is a screen of trees and shrubs between the end of the trail and the rail yard. However, a transmission line on 90 to 135 foot poles might be visible from the trail. Installation of the line might affect the options for continuing the trail through and beyond the rail yard.

The Oliver 1 Route (segment 377) crosses the Wild Rivers Trail at an existing transmission line corridor just east of County K. The location of the current and proposed trail crossing is at a high point on the trail that has a view of Duluth and Lake Superior in the distance. This is a DNR trail used primarily for snowmobiling but it is open during all seasons and allows all uses except cars and trucks. The trail is currently closed because construction of USH 53 has destroyed a section of the trail. A new connector is being negotiated with landowners.

There are two parallel recreation trails south and west of Solon Springs in the Douglas County Wildlife Area. The trails are used for hiking year round and snowmobiling in the winter. The trails parallel a pipeline and transmission line corridor through the wildlife area. The proposed transmission line on this portion of the route would be double circuited with or parallel to the existing 161 kV line. Because a pipeline corridor is located between the trails and the transmission line it is likely that the transmission line corridor would be widened to the west and away from the trails.

The North Country National Scenic Trail is one of only eight NST in the nation. 16 U.S.C. § 1242 defines NST as extended trails so located as to provide for maximum outdoor recreational potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which they pass. Transmission lines of the type proposed could degrade resource values along the trails and be contrary to the purpose of the statute.

In Wisconsin, the North Country Trail transects Ashland, Bayfield, Douglas, and Iron Counties. The trail helps to protect and provide access to a rich variety of scenic, historic, and natural resources. The NPS administers and is currently developing the North Country Trail in cooperation with a variety of public and private partners.

A section of the North Country Trail, as proposed, would cross the existing pipeline and transmission line corridor just north of the Douglas County Wildlife Area. This crossing of the trail (segment 367) would have less impact than a trail crossing on the Oliver 2 Route (segment 374/364) because it is an existing corridor with considerable infrastructure already visible.

The Oliver 1 Route would also cross the 75-mile long Tuscobia Falls State Trail, an abandoned rail bed that connects Park Falls and Rice Lake. The proposed route (segment 323) crosses the trail on an existing pipeline corridor about one mile south of the LCO Reservation. If the revised segment 324a were used, the crossing of this trail would be on a new corridor. Tuscobia Falls Trail is open to hiking, horseback riding, snowmobiling, and all-terrain vehicles.

Construction and maintenance of the proposed line on this route are not likely to change the use of any of these trails. There would be incremental aesthetic impacts on all users of the trails, but the line would not be a physical impediment to current trail uses. Special attention would have to be paid to placement of poles, especially any poles, such as corner structures, that require guy wires for support. Guy wires can be hazardous to trail users, particularly users traveling at higher speeds.

#### **County and town/village/city land use plans and zoning**

Beyond the county forests, neither the county, town, village, or city governments along this route have land use plans. However, all three northern counties affected by this portion of the proposed line, Douglas (the village of Oliver is excluded), Washburn, and Sawyer, have zoning jurisdiction. The village of Solon Springs (Douglas County) and the town of Radisson (Sawyer County) also have zoning jurisdiction. No zoning categories prohibit the presence of a transmission line. Therefore, construction of the proposed 345 kV line on the Oliver 1 Route would not require any changes in zoning by local jurisdictions. However, in almost all zoning categories, construction of the line would require a conditional use permit. (See Table 7-7.) Because transmission lines are a ‘permitted use’ (not prohibited but require application for a permit) in all jurisdictions and because Wis. Stat. § 196.491(3)(i) exempts transmission lines from local zoning if the line is granted a CPCN, the conditional use permit process is primarily a way of providing public notification. In all jurisdictions, a public hearing would be required as part of the permitting process.

**Table 7-7      Conditional use permitting process for the Oliver 1 Route**

	<b>Conditional Use Permit Needed</b>	<b>Public Hearing Required</b>
Douglas County	Yes	Yes
Washburn County	Yes, except in areas zoned commercial	Yes
Sawyer County	Yes	Yes
Radisson	Yes	Yes
Solon Springs	Yes	Yes

The following Table 7-8 indicates where the proposed Oliver 1 Route crosses land that is zoned in a category that would require application for a local conditional use permit.



**Table 7-8 Oliver 1 Route segments that require local zoning permits**

<b>Jurisdiction/Type</b>	<b>Segment Number and Location</b>	<b>Length (miles)</b>
<b>Douglas County</b>		
Resource conservation	393, around Nemadji River, north of County C	0.6
Residential	372, various	2-3
	367, south of Solon Springs	0.4
	360, in town of Gordon	0.8
Commercial/industrial	360, in town of Gordon	0.3
	367, east of Solon Springs airport	1.0
<b>Washburn County</b>		
Resource conservation	357, around Frog Creek	0.1
	346, around the Namekagon River, south of Highway 63 and east of County Road E	0.6
Residential	346, East of County Road E, just north of intersection with Beaver Lake Road	0.1
	341, around Loon Lake	0.5
	341, (mobile) south of Beaver Lake	0.2
Residential/recreational	359, around Totogatic River	0.1
	346, south of Namekagon River and just east of County Road E	0.3
	343, County E just south of Beaver Lake	0.2
Industrial	359, south of the Totogatic River and east of Totogatic Rd. and the rail corridor, owned by Lakehead Pipeline Company	0.3

## Roads

The need for and exact location of all new roads that might be needed to construct the proposed line on the Oliver 1 Route cannot be determined yet. One likely need for new roads would be to access stream crossings from both sides to avoid driving through the streambed with heavy construction equipment. Avoiding the need to drive equipment across streams minimizes the degradation of water quality and the riparian ecosystem. The location of the Oliver 1 Route in relation to existing roads and the proximity of these roads to proposed stream crossings was reviewed. That information is provided below.

The proposed Oliver 1 Route primarily follows existing corridors. For some stream crossings, there is no road on either side of the stream to provide access for construction of a high voltage transmission line. Some streams could probably be accessed through use of an existing road in conjunction with driving equipment for some distance on the existing corridors. In some cases driving equipment on existing corridor would require crossing wetlands located in the corridor. A construction plan describing special procedures to cross such wetlands may be required by the DNR. See the Natural Resources, Wetlands section for information about wetlands affected by this route.

Ten stream crossings on the Oliver 1 Route could be inaccessible. Construction of temporary roads may be needed to access these locations. Examples of these difficult-to-reach areas are the east bank of the Nemadji River and the west bank of Crawford Creek (segment 393).

Currently there is no road between the Nemadji River and Crawford Creek near the Oliver 1 Route. In order to avoid driving heavy equipment across either stream, an access road, about 0.75 miles long, would probably have to be built from CTH C (between STH 35 and CTH A) and the existing corridor. Another possibility would be to get landowner permission to develop a corridor across agricultural land somewhere in the same general vicinity. The Nemadji crossing on the existing corridor is adjacent to a long trestle bridge that could not be used as a crossing for heavy equipment. The proposed crossing of Crawford Creek is also next to a relatively high trestle, also unsuitable for use as an equipment crossing.

Another access road may be required to reach two crossings of Chippanazie Creek (segment 357). The stream meanders extensively and the route crosses it twice within a half mile stretch. An access road, 1.2 miles in length, from CTH M across Washburn County forest land to the existing corridor, halfway between the two proposed river crossings, would provide adequate access for construction. This would be in the Lost Lake Unit (11) of the county forest. The road would end near Lost Lake, which has an extensive 1,000-acre acid bog surrounding it. The area around Lost Lake is recognized in the WNHII as a high quality natural community. There are extensive scrub/shrub and forested wetlands in the area. Coordination with Washburn County Forest staff would be required.

The potential wetland impact of constructing both of these roads is covered in the Wetlands section of this chapter. These two roads would access four of the inaccessible streams. Other roads may be needed to access the other six streams but locations are not known at this time.

### **Agriculture**

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as an Appendix A to this document.

**Douglas County:** About 8.5 percent of the land in Douglas County is farmed, most of which is located in the northern half of the county. The farms mainly raise beef cattle but there are some dairy farms as well. The land is more suited to grazing and hay production than row crops. About half of the farmland is cropland and over 60 percent of that is used for hay production. There is a small amount of silage and oats grown as well. There are two cranberry growers in the Gordon area (segment 356) and one strawberry grower in Solon Springs.

**Washburn County:** In Washburn County, forestry would be more affected than farming, including county owned land and privately owned land in the Managed Forest and Forest Crop Programs. Traditional farms are found more in the southern half of the county, especially southeast, which would not be affected by the proposed line. Again, beef cattle (only 18 percent

of farms have dairy animals) and forage crops (hay is 44 percent of the cropland) are the main use of agricultural land. There is also some production of corn, silage, oats, and soybeans.

**Sawyer County:** About 6 percent of county land is farmed, with more farmland located in the southern half of the county. About half of the cropland is hay, with some production of corn, silage, and oats. There is also some cranberry production in the northern half of the county. Dairy production is the other main use of farmland in Sawyer County.

Irrigation would not be affected in any of the three counties on the Oliver Routes.

Drain tiles or grassed waterways might be affected in Douglas County but not in Washburn or Sawyer County. Some surface drainage may be affected in Sawyer County. The applicant is required by state laws to repair any damage to drain tiles, grassed waterways, or surface drainage systems. (See Landowners' Rights discussion in the beginning of Chapter 5.)

The length of agricultural land crossed by the Oliver 1 Route and the acreage are shown in Table 7-9. A comparison of the agricultural impacts of each of the Oliver routes is included in the summary in Chapter 12.

**Table 7-9      Agricultural impact for the Oliver 1 Route**

Measure	Double Circuit	Parallel
Agricultural zones (mi.)	33.2	33.2
New agriculture impact (mi.)	7.9	19.3
New agriculture impact (acres)	139	280.5

Thirty-three miles of the Oliver 1 Route would cross land zoned as agricultural. The proposed level of double circuit construction would affect half as much agricultural acreage as the proposed level of parallel construction. On most segments of the proposed line, double circuiting the new 345 kV line with the existing line would require that the existing ROW corridor be up to 20 feet wider. Parallel construction (a second set of poles, either single pole or H-frame, parallel to the existing line) would require an additional 105 to 115 feet of corridor. If the new 345 kV line were constructed along an existing pipeline or rail corridor on agricultural land, 98 to 132 feet of new corridor would be required.

Any additional corridor width would be “affected,” but not necessarily taken out of production. The actual amount of acreage lost to cultivation beneath a power line varies based on several factors. (See the discussion on agriculture in Chapter 5.) In general, single pole structures remove significantly less land from production and are easier to maneuver around with farm equipment than H-frame or lattice structures.

Additional information on agricultural safety issues can be found in Chapter 5.

## Visual

There will be new visual impacts over the full length of the Oliver 1 Route, although the amount of additional visual impact will vary depending on the existing infrastructure at various points along the route. The added visual impact would vary from up to 20 feet of new ROW with poles that are 30 to 60 feet taller than the poles currently being used on existing transmission line ROW, to 150 feet of new cleared ROW with 125 to 160 feet tall poles where no infrastructure existed before.

The primary visual impact on the Oliver 1 Route would be in those areas that do not follow existing corridors. About 20 percent of the length of the route, 18 miles, does not follow an existing corridor and would require easements for 120 to 150 feet of new ROW where none existed before. Most of the areas, where new ROW (with no existing corridors present) is needed, are located in Sawyer County.

The next level of visual impact would be on the portions of the Oliver 1 Route that are proposed to be located on existing corridors where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical infrastructure is visible. Because the pipeline companies may not allow overlap of the proposed transmission line ROW on the existing pipeline ROW, the new cleared corridor could be 108 to 132 feet wider and would contain a highly visible transmission line. About 11 percent, or 10 miles of proposed Oliver 1 Route, would be located in a corridor with only an existing underground pipeline. Most of these miles are located in Sawyer County.

About 9 miles of the Oliver 1 Route are along corridors with only an existing railroad line. The railroad companies are also reluctant to have the transmission line ROW overlap the railroad ROW, so the corridors would probably have to be widened 98 to 122 feet. Rail corridors have more visible infrastructure than a pipeline but the visual impact is not vertical, and often cannot be seen from very far away. The additional visual impact here will be less than on existing pipeline corridors but more than at existing transmission line corridors. About 2.3 miles of this type of corridor would be in Sawyer County and 6.4 miles would be in Douglas County east of Oliver and south of Superior.

The other 61 percent of the Oliver 1 Route (about 57 miles) would be located along existing transmission lines, sometimes with a railroad or pipeline as well. These existing transmission lines are lower voltage lines than the proposed line. The height of the existing lines ranges from 70 to 100 feet. Wherever the 345 kV line would be built as double circuit, the corridor would only need to be widened 0 to 20 feet but the new poles would be 125 to 135 feet tall, with corner poles as tall as 160 feet. Wherever the new high voltage line is built parallel to the existing line, the ROW would have to be increased by 75 to 120 feet, and the new set of poles would be 85 to 105 feet high with corner poles 100 to 130 feet tall.

### Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics and property values, the number of structures within 300 feet of the proposed centerline is provided in Table 7-10. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of facilities within 300 feet on the Oliver 1 Route to the number on other Oliver routes.

**Table 7-10 Number of facilities within 300 feet of the Oliver 1 Route**

Facility Type*	Double Circuit	Parallel Construction
Homes 0-50 feet	1	2
Homes 50-100 feet	1	2
Homes 100-150 feet	6	6
Homes 150-300 feet	36	30
<b>Total Homes</b>	<b>44</b>	<b>40</b>
Commercial/industrial/office 0-50 feet	2	2
Commercial/industrial/office 50-100 feet	4	4
Commercial/industrial/office 100-150 feet	1	1
Commercial/industrial/office 150-300 feet	6	7
<b>Total Commercial/Industrial/Office</b>	<b>13</b>	<b>14</b>
Agricultural outbuildings 0-50 feet	1	1
Agricultural outbuildings 50-100 feet	1	2
Agricultural outbuildings 100-150 feet	0	0
Agricultural outbuildings 150-300 feet	6	2
<b>Total Agricultural Outbuildings</b>	<b>8</b>	<b>5</b>
<b>Total Facilities</b>	<b>65</b>	<b>60</b>

\*There are no apartments, schools, day-care centers, hospitals, nursing homes, parks, or playgrounds affected by this route.

### Historical and archeological sites

Ten historic properties listed with the SHSW have been identified along the proposed Oliver 1 Route. The SHSW agrees that seven of the ten properties would not be adversely affected by the project. One is a cemetery, the Gordon Memorial Cemetery, which could easily be avoided by the transmission line. Another property is a historic Euro-American archeological site or structure (segment 357) that could also be avoided. A tavern of historic cobblestone construction listed on the National Register of Historic Places (segment 367) is on the route, but it is located where the new line would replace an already existing transmission line that runs beside it. Four other properties (three on segment 377 and one on segment 341) are prehistoric or historic sites that have already been surveyed and are not expected to be further affected by transmission structure installation.

Three of the ten properties are archeological sites that the SHSW indicates would require some survey work by a qualified archeologist if the project was approved and the approved route

extended through any of them. Two of the sites are prehistoric lithic artifact sites (both on segment 360). One is a logging camp from the turn of the century (segment 357). In each of these situations, the applicants have already agreed to have the survey done where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts in any of these areas, the applicants agreed to relocate the structure in consultation with the SHSW to avoid any further disturbance by construction.

#### **An additional area of concern**

The Washburn County Forest Plan describes one area on the Oliver 1 Route that is of historical interest but is not listed with the SHSW. While the SHSW intends to investigate the site eventually for potential listing, the county believes this site should be protected. The site is an area where there are copper mine shafts and old Euro-American homesteads near segment 357.

## **Oliver 2 Route**

### **Detailed description**

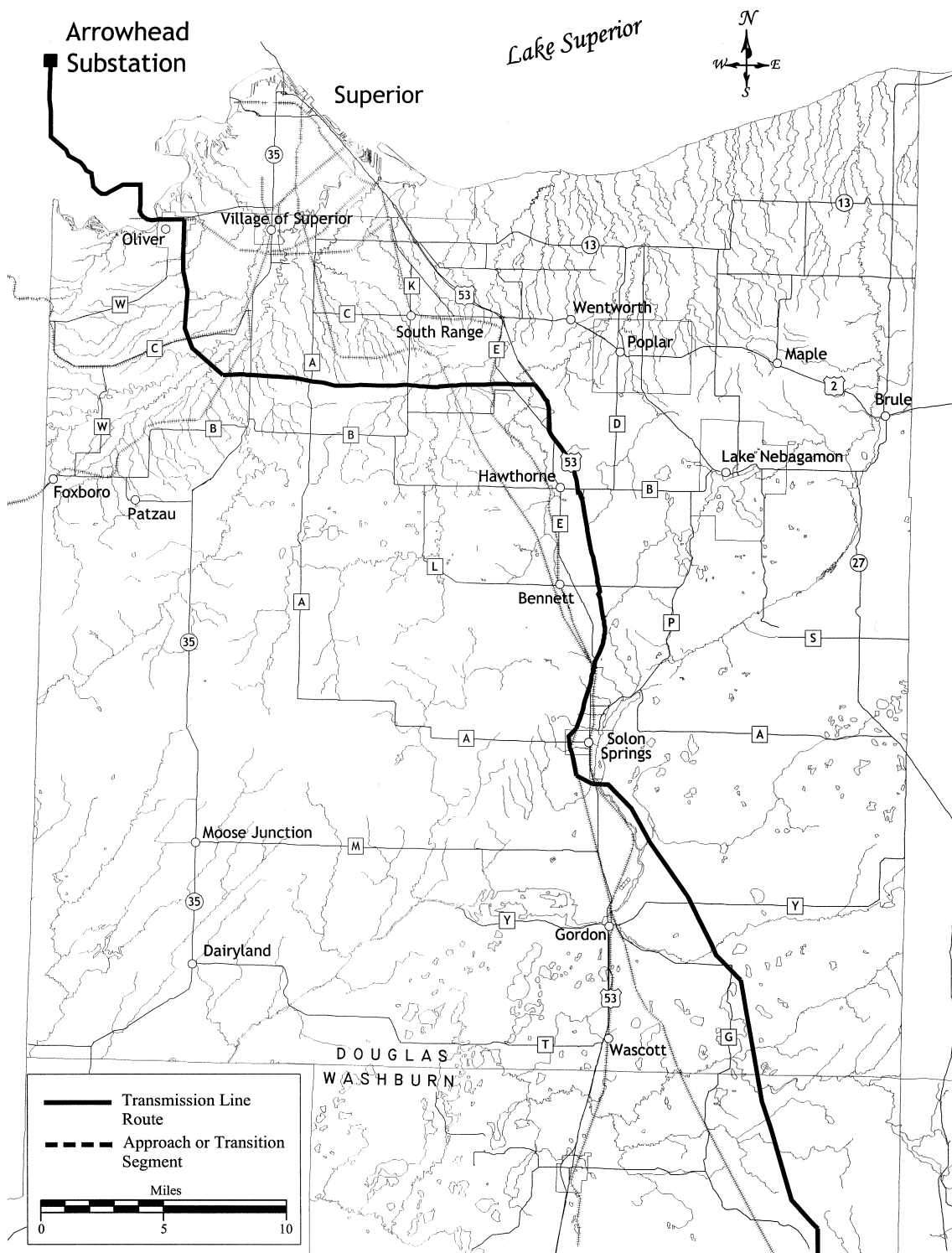
The route described below and shown in Figures 7-7 and 7-8 is a continuation of a 12-mile double circuit rebuilt line from the Arrowhead Substation in Minnesota across the St. Louis River to Oliver, Wisconsin. The portion of the project in Minnesota is covered under an application to the MEQB. The Oliver 2 Route, approximately 100 miles long, is primarily a cross-country route. Where it does parallel an existing transmission line, the new line could either be built as a double circuit with the existing line or built as a single circuit line parallel to the existing line (Figures 6-5, 6-6 and 6-7).

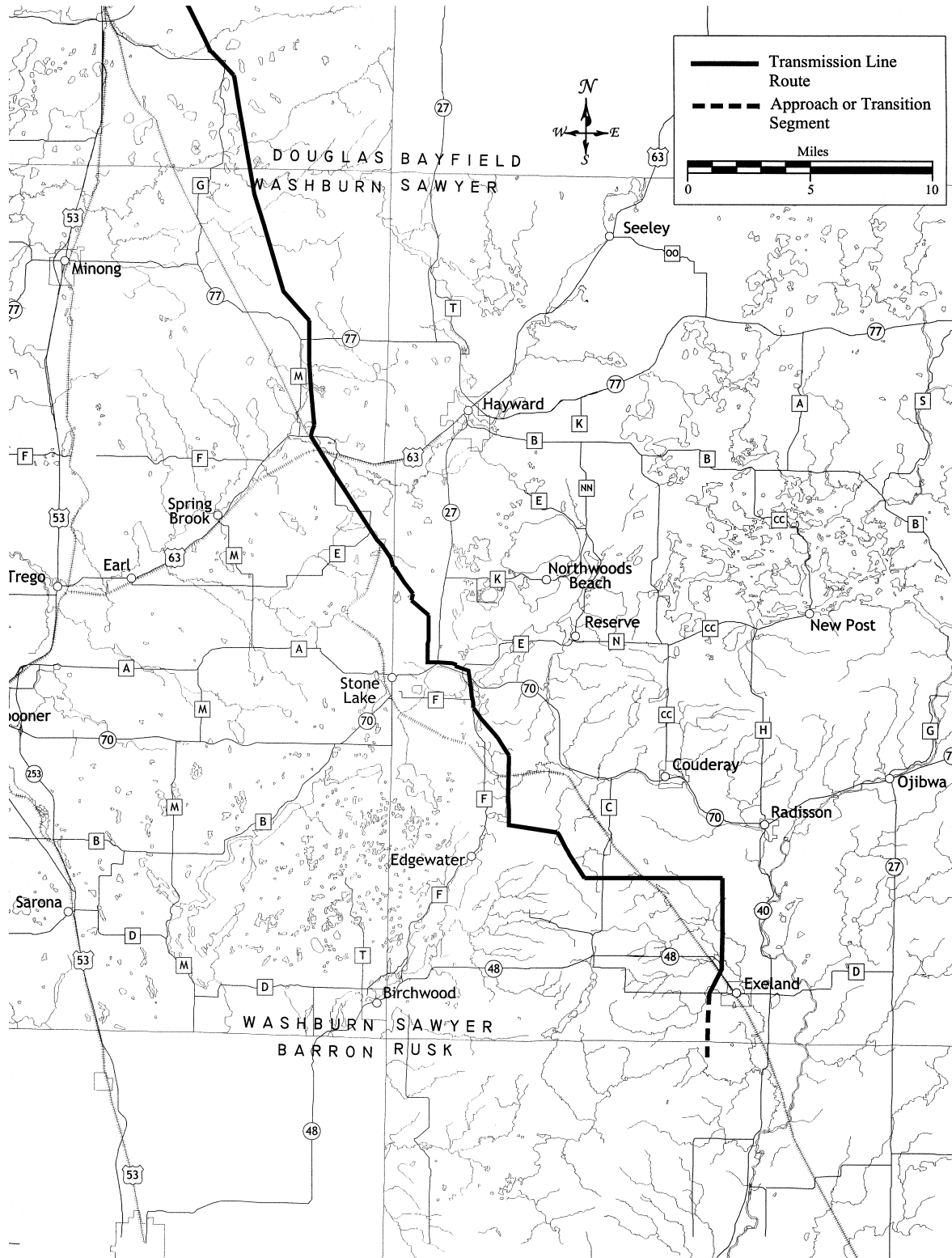
The route begins by crossing the St. Louis River at its narrowest point parallel to other highway/railway/utility crossings. The Minnesota-Wisconsin state line runs down the middle of the river. The proposed line route goes through the village of Oliver and then follows the existing SWL&P 115 kV transmission line ROW east for approximately one mile paralleling STH 105 and the DM&IR railroad. The area is a mix of residential and commercial property.

The route then extends south through a forested area for approximately two miles, crossing the Little Pokegama River, two pipelines and two branches of the Pokegama River. It continues cross-country in a southerly direction until turning east to parallel the Northern Natural Gas pipeline ROW for a distance of approximately six miles. The route crosses CTH C, two rail lines, the Nemadji River, the Black River, Copper Creek, Balsam Creek, Stoney Brook, STH 35 and several small, unnamed streams.

The route deviates temporarily from the Northern Natural Gas pipeline to avoid some residences. It continues east following the pipeline across CTH A and several streams associated with Rocky Run and Brook Creek. East of CTH K, the route crosses the Little Amnicon River, several unnamed streams, the Amnicon River, the Middle River, five branches of Silver Creek, the Wisconsin Central Railroad, and CTH E.

Figure 7-7 Oliver 2 Route (1 of 2)



**Figure 7-8 Oliver 2 Route (2 of 2)**



The route turns southeast to follow USH 53 for approximately 12.3 miles. It parallels USH 53 to a point just south of CTH B. The proposed corridor is on the west side of the highway. It crosses to the east side for a distance and then switches back to the west side south of CTH L. This area is a mixture of forested land and agricultural fields. In this section the route passes east of the communities of Bennett and Hawthorne and crosses the Poplar River and two branches of the Middle River and Beebe Creek.

The route continues south along the new USH 53 corridor west of Solon Springs for nearly five miles. Near Solon Springs the route veers a short distance off the highway corridor and eventually joins the Lakehead oil pipeline and an abandoned rail/snowmobile trail corridor. It crosses Park Creek and six small unnamed streams.

Approximately 1.2 miles south of CTH A the route turns east, crossing USH 53 southwest of Solon Springs, Business 53, the Wisconsin Central railroad, Leo Creek, and the St. Croix River just south of Upper St. Croix Lake. The route continues southeast on new ROW across Lower Ox Creek, which is a tributary of the St. Croix River.

Directly north of CTH Y the route continues cross-country, crossing the Eau Claire River and CTH G east of Gordon and the Totogatic River, the Ounce River, Frog Creek three times, and Black Brook further to the southeast. Shortly after crossing Frog Creek Lane, the route turns south. It crosses STH 77 and a branch of Chippanazie Creek twice as it parallels CTH M and passes the southwest corner of Stanberry Lake.

As the route approaches USH 63, the route angles to the southwest to join the Wisconsin Central Railroad corridor. It continues along the railroad corridor for several miles crossing the Namekagon River and the Chicago and Northwestern Railroad corridor. This portion of the route could be constructed as double circuit 345/161 kV line if the existing 161 kV line was relocated to this corridor. This would consolidate the facility crossings of the Namekagon River, which is part of the St. Croix National Scenic Riverway.

The route continues cross-country southeast, crossing to the east side of the Wisconsin Central Railroad to join the existing transmission line corridor. It follows the existing transmission line ROW through the area constrained by Loon Lake, Beaver Lake, and Bean Brook.

At the Washburn/Sawyer County line, the route continues southeast past the Stone Lake Substation. It follows a 69 kV line ROW south and then turns east across STH 27/70, rejoining the Lakehead Pipeline ROW and skirting around the north and east sides of Sand Lake. The route extends southeast along the pipeline corridor past Lower and Upper Holly Lakes and between Hungry and Ham Lakes to the western boundary of the LCO Indian Reservation. This area has been cleared to some extent for agriculture and residential development. The route crosses Sand Creek, Hauer Creek, Summit Creek, and Alder Creek. The new 345 kV line would be rebuilt as a double circuit, with the existing 69 kV line through this area.

The route turns south and parallels the west edge of the reservation for several miles and then at Summit Lake it turns east following the south edge of the reservation for several more miles.

The route then rejoins the Lakehead Pipeline corridor and continues in a southeasterly direction for about two miles crossing the Tuscobia Park Falls State Trail.

The route turns east and runs cross-country for nearly six miles crossing the Wisconsin Central Railroad corridor, CTH C, Swift Creek, Swan Creek, Maple Creek, and Little Weirgor Creek along the way. This area is primarily forested.

About one half mile east of Weirgor Road, the route turns due south and follows the 69 kV transmission line corridor for about four miles before angling southwest across STH 48 and the Wisconsin Central Railroad corridor.

The junction of segments 312 and 310 on the Oliver 2 Route is the end of the Northern Sector.

## **Natural resources**

### **Lakes**

There are ten lakes within 1,000 feet of the proposed route. These include: St. Croix Lake, Stanberry Lake, Loon Lake, Beaver Lake, Upper Holly Lake, Lower Holly Lake, Sand Lake, Ham Lake, Hungry Lake and Summit Lake.

In all cases except Summit Lake, the line would pass near the lake but not cross over it. At Summit Lake the line would have to be on the edge or a little over the lake. Two of the lakes, St. Croix Lake and Sand Lake, are designated OERW. Only Summit Lake and Loon Lake could be considered remote or undeveloped. All but three of the lakes are already near an existing transmission line. There is no existing infrastructure on the proposed corridor near St. Croix Lake and Stanberry Lake. There is only a dirt road on the proposed corridor near Summit Lake.

For the lakes near an existing transmission line, the addition of the proposed line would change the appearance of the existing line, increasing the impact on surrounding resources and the people who live there. If the new 345 kV line is constructed as double circuit, the existing line would be torn down and a new double circuit line would be constructed on the same corridor. The corridor width would increase by about 20 feet. The new poles would be taller (125 to 135 feet) and there would be three more double (bundled) wires on each pole. The applicants have proposed double circuiting the line near Upper Holly, Lower Holly, Sand, Ham, and Hungry Lakes. The portion of the 345 kV line near Beaver and Loon lakes could be either double circuit or parallel construction.

If the line is constructed parallel to an existing line, the existing line will remain as is and a new line would be constructed next to it. The corridor would have to be widened 85 to 115 feet, depending on the width of the existing corridor and whether the new line is on H-frame poles or single pole structures. H-frame construction requires a wider ROW but the poles would be shorter (85 to 95 feet) than single pole construction (90 to 105 feet).

From the point of view of lake users and dwellers, double circuit construction would make the poles visible from farther away, but parallel construction would require more new ROW

clearing. The best choice would be specific to each lake area, depending on the current land use and land cover, proximity to the lake, potential to mitigate impact on resources and people, and projected future use of the lake and surrounding land.

No double circuiting opportunities are possible near Stanberry Lake, St. Croix Lake, Summit Lake and south of Hungry Lake (segment 329). The 345 kV line would be single circuit with three bundled wires on H-frame structures or single poles. Single poles would be 90 to 105 feet tall with a 120-foot wide corridor. A line on H-frame structures would be 85 to 95 feet tall with a 150-foot wide corridor.

At the two lakes with no existing transmission line nearby, St. Croix Lake and Summit Lake, the addition of the proposed line would substantially change the character of the lake and surrounding area and would alter the experience of the visitor or recreational user (Stanberry Lake is not in this category since an existing transmission line currently crosses the lake and would remain in place, while the new 345 kV line would be located nearby in a new corridor). While a major portion of St. Croix Lake is developed, the outlet at the south end, where the crossing is proposed, is undeveloped. (See the section on St. Croix River crossings later in this chapter for more details.) At the proposed crossing there is over a mile of continuous wetland surrounding the river. (See the section on wetlands later in this chapter.)

Summit Lake has one dirt road near the southeast shore and several small homes on the north and west shore of the lake. The lake is at the southwest corner, but outside of, the LCO Reservation. The line would be close enough to the lake to require clearing of all the trees between the lake and the dirt road for quite a distance. The dirt road is very narrow with almost a covering canopy. Clearing for a transmission line along the road would completely change the view from the lake and create the potential for erosion along the road and the lake shore. Placement of a line here, so close to, or perhaps over the lake, would be incongruous with the current setting and use of the lake and surrounding area.

Regardless of which construction design is chosen, there would be a potential for soil compaction and erosion of the soils under the lines. Heavy construction equipment needed to remove the old line and install the new line can cause soil compaction or soil disturbance in the ROW. Special procedures to protect the immediate environment from these impacts near lakes and wetlands could be specified by the Commission in consultation with the COE and the DNR.

## **Rivers**

There are 71 river or stream crossings on the Oliver 2 Route. Twelve of the crossings are waterways that have been designated as either OERW<sup>200</sup> and the DNR has designated 16 crossings as trout streams. Thirty-eight of the crossings appear to be inaccessible.

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<sup>200</sup> The DNR maintains a list of outstanding and exceptional resource waters of the state. Outstanding Resource Waters (ORWs) include all national and state wild and scenic rivers. ORWs are defined as a lake or stream having excellent water quality, high recreational and aesthetic value, high quality fishing and is free from point source or non-point source pollution.

Table 7-11 indicates which streams along the Oliver 2 Route have been designated OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species prefer to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the stream habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations. Use of BMP and selective cutting near streams could help protect trout streams.

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Exceptional Resource Waters (ERWs) are similar to ORWs in terms of water quality, recreational and aesthetic value and wildlife habitat but may be susceptible to future point source pollution. Both Outstanding and Exceptional Resource Waters (OERWs) provide unique environmental settings that have not been significantly affected by human activities. The designated streams are identified in the state administrative code.

**Table 7-11 Rivers and streams on Oliver 2 Route (from north to south)**

St. Louis River	Branch of Silver Creek**τ	Black Brook
Unnamed stream	Branch of Silver Creek**	Totogatic River <sup>201</sup>
Unnamed stream	Branch of Silver Creek**	Ounce River τ
Little Pokegama River**	Branch of Silver Creek**	Branch of Chippanazie Creek***
Pokegama River**	Branch of Silver Creek**	Branch of Chippanazie Creek***τ
Branch of Pokegama River**	Middle River**	Namekagon River *
Nemadji River**	Branch of Middle River	Bean Brook τ
Balsam Creek**τ	Branch of Middle River	Sand Creek
Black River**	Poplar River	Unnamed stream
Branch of the Black River**	Beebe Creek*	Branch of Hauer Creek
Stoney Brook**	Park Creek τ	Hauer Creek***τ
Cooper Creek**	Unnamed stream	Summit Creek**
Branch of Cooper Creek**	Unnamed stream	Alder Creek***
Branch of Rocky Run**	Unnamed stream	Alder Creek*τ
Branch of Rocky Run**	Unnamed stream**	Branch of Swift Creek
Branch of Rocky Run**	Unnamed stream	Branch of Swift Creek
Branch of Rocky Run**	Unnamed stream	Swift Creek**τ
Branch of Brook Creek**	Leo Creek τ	Unnamed stream
Branch of Brook Creek**	St Croix River**	Unnamed stream
Little Amnicon River **τ	Lower Ox Creek**	Little Weigor Creek***τ
Unnamed stream**	Eau Claire River τ	Swan Creek*τ
Unnamed stream**	Frog Creek**	Maple Creek*τ
Unnamed stream**	Frog Creek**	Little Weigor Creek*τ
Amnicon River**	Frog Creek**	

\* Designated Outstanding or Exceptional Resource Water.

\*\* Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed.

τ Designated a trout stream.

**Shading** – indicates a new transmission line crossing - e.g. there is no existing transmission line at the proposed corridor crossing. In some cases there is an existing pipeline corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no existing overhead structure present.

### Accessibility

A stream crossing is considered inaccessible when no public road exists between two streams. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor<sup>202</sup> at least until it reaches a river or stream. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

<sup>201</sup> Designated a County Wild and Scenic River by Douglas County.

<sup>202</sup> If the corridor being used to move equipment from pole site to pole site is through wetlands, there may be further accessibility concerns. See the Wetlands section later in this chapter.

However, sometimes two streams are very close together or are located in an area with little development. In that case, there are three possibilities: a temporary or permanent road could be built;<sup>203</sup> a temporary or permanent bridge could be built; or the heavy equipment could be allowed to drive through the stream bed to the other side.

The preferred access method will vary depending on the environmental sensitivity of the stream, the condition of the stream, and the environmental damage that would be caused by disturbing the stream bed or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on Water Resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Use of a newly developed corridor as a temporary road is not without similar accessibility problems if the new corridor passes through wetlands. The DNR may deny permits to drive equipment across some sensitive wetlands on existing corridors. In that case, more road construction would be required. If the DNR does grant a permit to cross a wetland, the permit may be conditioned on filing a construction plan that includes special procedures to avoid or minimize wetland damage. See the Wetlands section of this chapter for information about specific wetlands affected by this route.

It is evident from the table above that the Oliver 2 Route has extensive areas where accessibility is a problem. This route was designed to avoid developed areas and the incumbent impacts on human communities, businesses, and some types of recreation. The Oliver 2 Route crosses more rivers and crosses them more frequently in places where the rivers are not easily accessible than the Oliver 1 or 3 Routes.

Only 10 of the 71 river or stream crossings are at an existing transmission line crossing. Eight of the 61 new crossings are on streams designated OERW. Of those eight, five are inaccessible. Granting a permit to cross the streambed with construction equipment may be less likely where the stream has been designated an OERW. This would narrow the access options to building a road or a temporary bridge, both of which are more expensive than the assumed solution of driving equipment across a stream bed.

While the Oliver 1 Route has about eight places where access to streams was a problem, the Oliver 2 Route has 40 situations where accessibility is limited. Only five of the access problems are further complicated by OERW designation, but many will require roads or temporary

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<sup>203</sup> Use of private roads or logging roads are possible if arrangements can be made with the owner. Some incremental impact is likely since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

bridges, increasing the cost to construct the new 345 kV line on this route. These potential access roads are described in the section of this document describing local community and road impacts.

#### **Specific information about some of the rivers**

Not every stream crossing has been analyzed in detail, but the following information was gathered on site visits or received from people who are familiar with the stream or the area of the crossing.

**St. Louis River:** The proposed crossing of the St. Louis River is at the STH 105 bridge, about eight miles south of where the river empties into Lake Superior (segment 397). The state line between Minnesota and Wisconsin runs along the river for several miles above and below the proposed crossing. The river valley at this location is about 0.75 mile wide, most of it wetland on the Minnesota side of the river.

The existing bridge over the St. Louis River is a double-decker steel bridge with a rail line on the top level and two motor vehicle lanes on the lower level. Vehicles over 5 tons are prohibited. The vehicle level consists of two very narrow lanes with a wood bed. This bridge is scheduled to be rebuilt starting in 2001. An existing transmission line runs beside the bridge with most of the poles on the Minnesota side of the river. Within the valley there are now two sets of steel poles (one set in Wisconsin) and three sets of wood poles in Minnesota. In overview the river valley appears undeveloped but there is an industrial site and rail yard on the Minnesota shore.

On the Wisconsin side of the river there is a small housing development on a bluff overlooking the valley near the bridge. If the line stays along the bridge and then the rail tracks, only one house (a new house) would be physically close to the proposed line. Because there is an existing transmission line crossing the river at this location, concerns would be related to the incremental impacts of the additional circuit. There are six houses in the development, some may be seasonal, and not all have a clear view over the valley. However, the proposed line would affect the view from several homes.

**Nemadji River:** The Nemadji River has carved a wide steep-banked ravine entrenched into red clay with many meanders. The Nemadji River is listed in the NHI as a good quality river community and is listed in the NRI for its scenic quality. The crossing of the Nemadji River on the Oliver 2 Route is a new crossing in a wooded area on private land near a Douglas County Special Use area (segment 384). The river is wide and inaccessible at the crossing. Within a mile there are three new river crossings, including this one, all inaccessible, all substantial rivers with steep banks. The Gandy Dancer Recreation Trail runs between the Black River and Balsam Creek but the nearest road is two miles north along the trail. Turning the trail into an access road for an extended time would interfere with its recreational use. There do not appear to be any practical options for building temporary roads in this area. Temporary bridges would be very large and expensive. Direct crossing of the streams by construction equipment is probably not physically possible. Constructing a transmission line in this area presents some major physical obstacles and would cause considerable environmental damage. Mitigation would be difficult because revegetation in red clay soil is very slow, increasing the chances for erosion of the banks and silt build-up in the river.

**Balsam Creek:** The crossing of Balsam Creek on the Oliver 2 Route is a new crossing in a wooded Douglas County Special Use area and near the Gandy Dancer Recreational Trail (segment 384). See the above description of inaccessibility problems.

**Black River:** The crossing of the Black River on the Oliver 2 Route is a new crossing in a wooded area near a Douglas County Special Use area and the Gandy Dancer Recreational Trail (segment 384). See the above description of inaccessibility problems.

**St. Croix River:** The St. Croix and the Brule Rivers were outlets for Lake Duluth, the glacial precursor of the present day Lake Superior. The course of both rivers has changed since glacial times but both have continued to be historically important waterways. The St. Croix is a popular canoeing river with thousands of visitors every year. The portion of the St. Croix near the proposed crossings, often referred to as the Upper St. Croix, has a slow meandering character with broad open expanses of wetland. The proposed crossings of the St. Croix River were viewed from a canoe.

The exact crossing location is somewhat difficult to determine. If the proposed crossing is south of the mouth of the river, the wetland/open water appears to be too wide to cross with a single span. If the proposed location is at the narrowest point where the river begins, it would require complete clearing of the two points of land that mark the south end of St. Croix Lake. Because there is open water and wetland on either side of this area, without stabilization provided by the existing trees and shrubs, erosion could affect the stability of the line structures. This location would also make the line visible from the whole lower quarter of the lake. There are many houses on St. Croix Lake but none in the headwater area. South of the two points of land is a wide-open wetland area. However, the open-water area, where watercraft pass through, is quite narrow. The rest of the wetland is overgrown with aquatic plants and floating sedge mats. There does not appear to be any solid ground in this low area.

The east side of the Upper St. Croix River gradually slopes upward toward higher ground. At that point, the transmission line would turn south, following the higher ground. A 345 kV line would be taller than most of the trees growing in this area making the line visible for a mile or more along the St. Croix River. The entire area on the east side of the river is inaccessible. There are no access roads for at least 0.5 mile on the east side of the river. Access from the west side of the river might be possible if the existing bridge over the St. Croix on Cutaway Road were rebuilt to hold large equipment. Construction of a larger bridge and a more solid corridor through the wetland area east of the river could increase recreational use and result in change to the character of that area.

Of the two crossings of the Upper St. Croix River, this crossing is less feasible from an engineering perspective and would likely have the most environmental impact.

**Ox Creek:** The proposed crossing of Ox Creek on the Oliver 2 Route (segment 365) is at a new crossing, where no infrastructure is currently visible. The crossing is inaccessible and surrounded by wetlands. Trumpeter swans (state endangered species) nest in this area and overwinter on the St. Croix River north of St. Croix Falls and at Hudson. They are frequently accompanied by their young.



**Eau Claire River:** The Eau Claire River shorelines are quite wild and the current is medium with some low rapids. It is a popular canoeing and fishing river that connects to the St. Croix River. Trout fishing is good in fast water stretches and bass, pike, and musky are caught above the dam near Gordon.

The river is narrow, winding, and generally shallow with lots of trees creating riffles and pools. Numerous fish, including trout, are visible in the clear water. Herons are commonly observed feeding and wading in the river.

The proposed crossing of the Eau Claire River on the Oliver 2 Route (segment 362) is at a new crossing, where no infrastructure is currently visible. No houses or infrastructure are visible from Lindberg Bridge Road to this crossing. The area around this proposed crossing is wild (no development visible) with low banks, lots of snags in the river, and wetlands just beyond. There are two or three houses just below the proposed crossing (within 0.5 mile of Lawler Bridge). However, no additional development is present downstream until the State Camp bridge and the State Camp (Minimum Security Facility).

**Totogatic River:** The Totogatic River, from the Totogatic Flowage to the Minong Flowage (including this crossing), is classified by Washburn County as a County Wild and Scenic River. It requires alternate management, similar to that of a national Wild and Scenic River, and is considered an aesthetic zone. The primary objective is to improve and maintain the primitive and undeveloped characteristics of the riverway. Permanent structures, facilities, roads, or other permanent or obvious alterations of the wild state are not permitted within 200 feet of the river. Further, none of the above is permitted outside the 200-foot corridor if it adversely affects the wild state of the river. In general, no cutting of trees is permitted within 100 feet of the river, or visual distance from water's edge, whichever is less. The Totogatic River is also listed on the NRI for its scenic quality.

The section of the Totogatic River near the proposed crossings is narrow with a steep and rocky bed. The water level fluctuates greatly depending on rainfall and operation of the Minong Dam, but users are rewarded with views of a wild and secluded riverway.

The proposed crossing of the Totogatic River on the Oliver 2 Route (segment 256) is at a new crossing. Based on aerial photos, the crossing is forested on both sides of the river. The south bank of the river is in the Washburn County Forest but both banks are zoned Resource Conservation by the county and would require a conditional use permit from the county.

This proposed crossing, if constructed, would be incompatible with the management objectives of the Washburn County Forest and Washburn County. This proposed crossing would be more incompatible with those objectives than the other proposed crossing of the Totogatic River on the Oliver 1 Route (segment 359) at an existing pipeline and transmission line crossing.

**Namekagon River:** See the Oliver 1 Route discussion; both routes use the same proposed Namekagon River crossings.

**Hauer Creek:** Hauer Creek has been designated a Class II trout stream and an ERW. It originates in a spring pond 0.75 mile from Hungry Lake, and flows southeasterly for 2.5 miles before it joins Summit Creek near the intersection with segment 326. Segment 326 would parallel Summit Lake Road at the crossing. The Hauer Spring Fishery Area is located around the headwater spring. The stream is surrounded by lowland conifers, shrub marsh, open marsh, and pastureland. The average width of the stream is 7 feet while the average depth is 10 inches. The creek bottom near the proposed crossing (segment 326) is sand and silt. There is no existing infrastructure.

**Little Weirgor Creek:** This stream is designated an ORW and a Class II trout stream. It has an average depth of 0.4 feet and a mean flow of 4.5 cubic feet per second. The water is clear with neutral pH. The bulk of the stream bottom is overlain with silt with only 10 to 15 percent in sand or gravel. The Oliver 2 Route crosses the creek twice (segments 321 and 312) within the Weirgor Springs Wildlife Area. (See other county, state, and federal land section for a description of the wildlife area.) The crossing at segment 312 is along an existing transmission line corridor.

### Wetlands

Although the importance of wetlands is not always obvious to the casual observer, they serve several vital functions that benefit society. Wetlands store storm water runoff, enabling the recharge of groundwater sources. Wetlands filter sediments and pollutants from the air, precipitation and upstream sources, resulting in higher water quality in downstream water bodies and rivers. Wetlands provide food, cover, and nesting habitat for many species of fish and wildlife. This special habitat could be destroyed or at the very least would be decreased by development of ROW in a wetland, especially a wetland with no existing corridor. Power line structures and conductors can also pose a collision hazard for sandhill cranes, waterfowl, and other large water birds that frequent wetlands, especially under low light conditions or in poor weather. For this reason it is important to know how wetlands would be affected by construction of this project.

The wetland impacts of the Oliver 2 Route do not vary much between the double circuit construction option and the parallel construction option.

**Table 7-12 Wetland impacts for the Oliver 2 Route**

Double circuit	84.0 acres of new non-forested wetland
Parallel construction	108.4 acres of new non-forested wetland

For analysis purposes, forested wetland impacts were analyzed and are discussed under the Forest section rather than in the Wetlands section. It is important that the impacts not be double counted. However, to determine total wetland impact, the non-forested and forested wetland impacts must be added together.

If the line were double circuited on the Oliver 2 Route, 132.5 acres of new forested wetland would be affected. Adding this to the new non-forested wetland impact would result in 216.5 acres of total new wetland impact. If parallel construction were used on Oliver 2, there would be 138 acres of new forested wetland affected for a total of 246.4 acres of new wetland impact.

Affected area, of course, is not the only consideration. Quality of the wetland is also important. The information available on GIS maps only indicates wetland type and size. Because Commission staff was unable to investigate every wetland in person, it relied on local landowners, DNR staff, and county forest staff to identify especially sensitive or high quality wetlands.

If the proposed line is on a new corridor (no existing infrastructure) the wetlands may have never been disturbed before. There would be a greater potential for higher quality wetlands along these new corridors. Even existing corridors that have not been disturbed for many years could have recovered to their former quality. The Oliver 2 Route has 3 miles of non-forested wetland on the proposed corridor where no infrastructure existed before. The Oliver 1 Route is primarily on existing corridors, usually transmission line corridors. This may be the reason there are fewer sensitive wetlands on the Oliver 1 Route than on the Oliver 2 Route.

The size of a wetland affects the potential for impact. Wetlands that measure less than 800 feet along the ROW allow for placement of poles at either end of the wetland. The Oliver 2 Route has at least 26 wetlands (forested and non-forested) that are wider than 800 feet, making it difficult to construct a 345 kV transmission line without placing at least one pole in the wetland. Placing poles within a wetland requires that construction equipment get to the pole site. The equipment can get to those locations by using the existing or newly developed corridor through the wetland as a temporary road. Another option would be to build temporary roads into the wetland from the nearest existing road. If the wetland is long and narrow along the corridor this approach would disturb less wetland. Building temporary roads, however, also causes environmental damage. Soil is often compacted and there is decreased hydrologic function, if fill is used to construct the roads. Soil disturbance and compaction can encourage proliferation of nuisance or non-native species. Building roads in wetlands could trigger the need for a Section 404 COE permit. Road construction would be subject to the same requirements as pole placement in wetlands.

Accessibility of the wetlands affects the amount of impact. If there are several wetlands in an area with no roads between them, it may be necessary to drive through one or more wetlands on the corridor to get to the next wetland. Again, temporary roads could be constructed from nearby roads to access each isolated wetland, but usually, where there is a string of wetlands with no roads in between, there are few other roads nearby.

Moving construction equipment can substantially damage a wetland. Heavy machinery used for clearing trees and brush, drilling holes, hauling cement and setting poles can crush wetland vegetation and compact wetland soils. Soil compaction reduces the water-holding capacity of the soil and may result in increased runoff. Compaction would also interfere with the filtering capacity and could cause a change in the water flow through the area. A change in the water

flow could change the size or type of the wetland. The applicants could be required to construct in wetlands only when the ground is frozen, to use matting under equipment in all wetlands, to restore the wetland to its original condition, including replanting of some areas, and to use special techniques to prevent transport of undesirable species from one location to another. The Commission can also require mitigation procedures as part of its approval process.

The section on Water Resources in Chapter 5 has a description of the state (DNR) and federal (COE) laws that protect wetlands, the types of wetlands are eligible for special consideration, and how the formal permitting process would work. It also describes the additional authority of the Commission to protect water resources.

### **Inaccessible wetlands**

There are over 20 inaccessible wetlands (forested and non-forested) on the Oliver 2 Route. They are grouped in 11 areas along the line. The route is primarily cross-country, using very few existing transmission line corridors and some pipeline, rail, and road corridors. About half of the proposed route has no existing infrastructure on the proposed corridor. Cross-country routes generally are in areas where there is little development and fewer roads, resulting in more inaccessibility problems. By comparison the Oliver 1 Route, which uses more existing corridors, has only 10 to 12 inaccessible wetlands and they are concentrated in only two areas.

- There are several large wetlands southeast of Oliver, two wider than 800 feet, with only one road in the vicinity. Several more wetlands are located between two branches of the Little Pokegama River with no roads in the vicinity (segment 396 new corridor).
- Further south (segment 395 new corridor) there are several wetlands, at least one over 800 feet, between the Little Pokegama River and two branches of the Pokegama River, again with no roads in the area.
- There are several small wetlands and three large wetlands, over 800 feet wide, associated with the Pokegama River, Balsam Creek, the Black River, and Stoney Brook (segment 384 mostly new corridor, some pipeline). There are few roads in the area.
- Two small wetlands are located east of Swamp Road and south of Mikrot Road (segment 376 natural gas pipeline).
- Six to seven small wetlands associated with branches of Silver Creek, located south of Mikrot and Abrahamson Roads (segment 373b natural gas pipeline).
- There are several small wetlands associated with the St. Croix River and the outfall of Lower Ox Lake to the St. Croix River (segment 365 new corridor).
- Several small wetlands, associated with Black Brook and Frog Creek, are located north and south of Wozny Road (segment 356 new corridor).
- Several small wetlands associated with Chippanazie Creek are located south of Hwy 77 and east of County M (segment 355 new corridor).

- One wetland is located along Swift Creek west of County C (segment 322 new corridor).
- Wetlands exist around Little Weigor Creek north of the end of Brisko Lane (segment 321 new corridor).
- Many wetlands exist around and between Little Weigor Creek, Maple Creek, and Swan Creek (segment 312 existing transmission line).

#### **Sensitive wetlands areas**

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) may take longer to recover than other types of wetlands containing emergent vegetation. The Oliver 2 Route crosses 0.7 miles of sensitive wetland, all on ROW with no existing corridor. The largest concentration of sensitive wetlands is on segments 355 (0.3 mile) and 356 (0.2 mile). Avoidance of the area or requiring the most effective mitigation techniques could be warranted. (See Chapter 5 for more information about sensitive wetlands.) Since the main issue is long-term recovery, there may be more impact on this route than on the Oliver 1 route, where there is 1.7 miles of sensitive wetland, but it is all on existing corridor. The corridor on that route has already been disturbed and may not yet be recovered, while the proposed corridor on Oliver 2 has never been disturbed.

#### **High quality wetlands**

There are 10 wetland (forested and non-forested) areas on the Oliver 2 Route that are considered either high quality, sensitive, or are associated with OERW.

- An area south of Solon Springs, called the Brule Jack Pines Area, has been described by The Nature Conservancy as a significant bird area. The proposed line would run across the north end and along the east edge of the large forested wetlands on the east bank of the St. Croix River. This area supports breeding pairs of rare and nongame birds, and is believed to be important to their long-term conservation (segment 368 and 365 new corridor).
- Chippanazie Creek is designated an ERW and there are some large scrub/shrub wetlands where the Oliver 2 Route is proposed to cross the creek (segment 355 new corridor).
- Just south of the Namekagon River, this route passes through some forested and emergent wet meadow wetlands between the Bean Brook State Wildlife Area and the Flat Creek State Wildlife Area (segment 341 existing transmission line).
- South and east of Hungry Lake there is a large scrub/shrub wetland complex that is the headwaters for the Hauer Springs State Wildlife Area (segment 329 new corridor).

- There are forested wetlands associated with Hauer Creek (segment 326 new corridor). Hauer Creek is designated an ERW.
- There are forested wetlands associated with Alder Creek (segment 326 new corridor). Alder Creek is designated an ERW.
- There is a forested wetland at the proposed crossing of Swift Creek (segment 322 new corridor). Swift Creek is designated an ERW.
- There is one forested and scrub/shrub wetland at the proposed crossing of Little Weirgor Creek on segment 321 (new corridor) and several forested and scrub/shrub wetlands at the segment 312 crossing (existing transmission line). Little Weirgor Creek is designated an ORW.
- There is an emergent wet meadow wetland at the proposed crossing of Maple Creek (segment 312 existing transmission line). Maple Creek is designated an ERW.
- There is a scrub/shrub wetland at the proposed crossing of Swan Creek (segment 312 existing transmission line). Swan Creek is designated an ERW.

Construction of a transmission line through these wetlands and probably others could require special construction techniques, careful placement of poles, and mitigation of any impacts. It may be necessary to require that the applicants purchase new high quality wetland properties that would be given protected status, to compensate for the loss of prime wetland.

## Forests

Forests provide recreational opportunities, wildlife habitat, fuel, habitat for rare plants and animals, and timber and pulp for the paper industry. Building this high-voltage power line would require clearing many acres of trees and shrubs. Depending on where it occurs, this clearing could cause general loss and degradation of wooded habitat, pulp and timber losses, and forest fragmentation.

Degradation can occur when invasive species are carried into a forest inadvertently by construction equipment and when soil and light conditions are altered so as to encourage growth of weedy species. This can result in a loss of plant and animal diversity. Trimming and clearing of trees at certain times of the year can also contribute to the spread of disease.

The production of trees for pulp and timber use is an important industry in northwestern Wisconsin. Because transmission line ROWs must be kept clear of woody vegetation that grows taller than 10 to 12 feet, the area within the ROW would be permanently lost as a site for pulp and timber production. (See Chapter 5 for more information about impacts to forests.)

The following tables summarize the amount of forest impact for the Oliver 2 Route. Because there are many areas where there is potential for either double circuit or parallel construction, the data are presented for both options. If there is a mix of double circuit and parallel construction the impact could be somewhere between the two options noted.

**Table 7-13 Forest impacts for the Oliver 2 Route**

	Double Circuit	Parallel Construction
New* wetland forest crossed (miles)	10.0	10.0
New* upland forest crossed (miles)	39.2	39.2
<b>Total New* Forest Crossed (miles)</b>	<b>49.2</b>	<b>49.2</b>
Wetland forest cleared (acres)	132.5	138
Upland forest cleared (acres)	863.5	915.5
<b>Total Forest Cleared (acres)</b>	<b>996</b>	<b>1,053.5</b>

\* No corridor currently exists of any kind.

Area (acres) of affected land varies for different construction techniques (double circuit or parallel). Double circuit construction generally requires 20 more feet of ROW width, while parallel construction can require up to 120 feet more ROW width. The acres shown here include acres that would have to be cleared to widen an existing corridor as well as acres of new corridor where none currently exists. Where there is no existing corridor (49.2 miles on Oliver 2), the new corridor will be 120 to 150 feet wide depending on the pole type.

#### **Forest fragmentation impact**

An analysis of the forest fragmentation potential for the Oliver 2 Route was completed as described in Chapter 6. Eight blocks of forest larger than 1,000 acres and with forest/forested wetland cover greater than 70 percent were identified along the Oliver 2 Route. The Oliver 2 Route was designed as a cross-country route, one that would avoid developed areas and existing corridors. As a result, the Arrowhead-Weston line would create a new corridor through seven of the blocks. (See Table 7-14.) As indicated in Chapter 5, this is the type of situation with the greatest potential for forest fragmentation. The summary in Chapter 12 compares the forest fragmentation potential of all three Oliver Sector routes.

**Table 7-14 New ROW fragmentation on the Oliver 2 Route**

Block #	Segment #	Size (Acres)	% Cover	Primary Types
5	365	1,000	67%	Red pine, aspen, and mixed deciduous/coniferous
6	363	1,000	76%	Jack pine and aspen
7	356	9,100	91%	Aspen and other deciduous
9B	355	1,800	91%	Aspen and other deciduous
9	355	4,200	80%	Aspen and other deciduous
12	326 322	9,400	91%	Aspen, oak, and other deciduous
15	322, 321	11,400	86%	Aspen and other deciduous

Table 7-15 shows that there is one block greater than 1,000 acres with greater than 70 percent forest/forested wetland coverage that already has some type of corridor at the location of the proposed transmission line. This block would be affected less by fragmentation than the blocks without any existing infrastructure corridors. The existing corridor already “fragments” this block but a wider corridor has the potential to incrementally affect the forest block. There may be some species present that are not sensitive to the fragmentation caused by the existing

corridor width but would be affected by a wider corridor. The amount of incremental impact cannot be determined without a much more detailed examination of existing habitats and species.

**Table 7-15 Existing ROW with potential for incremental fragmentation on the Oliver 2 Route**

Block #	Segment #	Size (acres)	% Cover	Primary Types
12	323	9,400	91%	Aspen and other deciduous

Further analysis of forest fragmentation potential was done using a smaller forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential greatly increases when clearing ROW through these smaller forest blocks is considered. At least 14 blocks of this size have been delineated on this route.<sup>204</sup> While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200 to 400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

Nine of these blocks would require creation of a new corridor while the potential for fragmentation on the other five would be incremental due to the presence of existing infrastructure in the corridor.

#### **Industrial forest**

There are two areas on the Oliver 2 Route that have concentrations of industrial forest. This is corporate owned and operated forest production, primarily chipping or pulping for paper products. One area with a concentration of industrial forest, primarily owned by Nekoosa and Mosinee, is along the proposed route in Douglas County, north and south of Solon Springs and Gordon. Proposed segments along the Oliver 2 Route cross 3.75 miles of industrial forest in Douglas County. A second area where there is a concentration of industrial forest is in Sawyer County between the LCO Reservation and Exeland. Here the industrial forest is primarily owned by Futurewood Corporation. Proposed segments along the Oliver 2 Route cross 3.75 miles of industrial forest in Sawyer County. See Chapter 5 for an explanation of the impacts on industrial forest.

#### **Wildlife**

The proposed transmission line could impact wildlife through direct harm to some species and by altering the suitability of wildlife habitat. Construction activities can be noisy for a long enough period to discourage nesting or burrowing. Machinery and workers could crush vegetation that provides food, nesting sites, and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats of stream fauna. ROW clearance and line construction near lakes, rivers and

<sup>204</sup> These blocks are mutually exclusive of the 1000 acre+ blocks and thus have not been double counted for this analysis.



streams can cause damage to fauna habitat from erosion and siltation. Transmission line corridors can fragment habitat by converting woodland to shrub and grassland (see the forest section for information on forest fragmentation) or degrade habitat through introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near rivers and streams can drift or run off, polluting the water. Transmission line conductors, structures, and associated guy wires pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Oliver 2 Route are described below.

The timber wolf is classified as a threatened species in Wisconsin. There is an area along the Oliver 2 Route (segment 384) just south of Superior with habitat considered high potential timber wolf territory. Although there is no recorded pack in the area, fragmentation of the area with a new transmission line corridor could affect its viability for location of a pack in the future. A portion of the proposed Oliver 2 Route would parallel USH 53 for about 17 miles. When USH 53 was constructed, considerable research and design effort went into making the highway less dangerous for wolves in the area.<sup>205</sup> More research has been done as follow-up and now more is known about wolf interaction with infrastructure such as roads and transmission corridors. The Commission could require consultation with a design panel and use this new information to design the ROW if the line intersects and follows USH 53 (segments 373b, 399, and 398).

In northern Washburn County the Oliver 2 Route (segment 356) crosses through the middle of the territory of the Frog Creek Wolf Pack and would require creation of a new corridor. Timber wolves tend to avoid areas of human activity. Transmission line construction activity could drive the wolves away from this part of their territory, at least during the construction phase. Wolf pack dens tend to be within the interior 25 percent of each territory, located on high ground within a wetland complex, and usually at least one kilometer from an improved road. The Oliver 2 proposed corridor is near the center of the pack territory, passes through several wetland complexes, and would be on a new corridor several kilometers from improved road. Construction on this route could disrupt denning as well as hunting activities of the pack. Current and future denning sites could become unusable. Limiting the pack's denning and hunting choices could decrease the pack's viability. Displacement of the pack to a new area would be difficult because there are no other unoccupied good habitat locations nearby.

The Oliver 2 Route crosses several rivers and wetlands that support threatened and endangered species, including mussels and plants. Impacts to these species could be avoided if construction equipment does not enter these rivers or wetlands and if proper erosion control measures are implemented. Specific impacts on aquatic species in streams and wetlands, including threatened and endangered species, will be determined by DNR. If the applicants file for a permit to cross a stream the DNR will determine the need for further review for the presence of aquatic threatened and endangered species under Wis. Stat. § 30.29. If the applicants are required to get

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<sup>205</sup> WDOT incorporated many of the suggestions of a panel of wolf biologists. No fences were placed on any of the 71 km under reconstruction and private access was limited to the current level to minimize further development. The bridges over the Totogatic River were designed to allow wolves to cross under the highway and the medians in seven areas were made much wider, leaving existing natural vegetation, to provide stopping places in the middle of a crossing.

a Section 404 COE permit to cross wetlands, then the DNR will determine the need for further review for the presence of threatened or endangered species under Wis. Admin. Code ch. NR 103. If necessary the DNR can deny a permit or require mitigation procedures to protect any threatened or endangered species. See Chapter 5 for a more complete description of the river and stream permitting processes.

Bird strikes are also a concern where the line would span rivers. Bald eagles and osprey were observed on the Eau Claire, St. Croix, and the Namekagon Rivers and could be present at many other locations within the project area. Trumpeter swans nest near Lower Ox Creek. These birds are listed on state or federal threatened and endangered species lists. Rivers and their associated wetlands can also serve as corridors for daily and migratory flights by birds. There is a significant bird area, identified by the Nature Conservancy, located on the Oliver 2 Route south and northeast of Solon Springs. This area (Brule-Jack Pine) supports mating pairs of rare game and non-game birds and is considered important to their survival. Placing markers on the wires of transmission lines in well known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with lines.

The wood turtle, a state-threatened species, has been observed on the Oliver 2 Route in the Namekagon, St. Croix and Black Rivers. Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction near the river during the egg laying and hatching period from June to late September.

There have been sightings of Canada lynx in northwest Wisconsin. Any elevation in the level of human access into a forest where lynx are present is a significant threat to their viability. Any increased likelihood of lynx encountering people (such as new access corridors) could result in displacement from their habitat or possible injury or death by intentional or unintentional shooting, trapping, or vehicular accident. Changes in the forest habitat that encourage the presence of bobcats and coyotes will decrease the lynx population.<sup>206</sup>

Table 7-16 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. As noted above, more surveys for aquatic threatened or endangered species may be under taken by DNR as part of any permit review.

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<sup>206</sup> USFWS Proposed Rule, Canadian Lynx, Federal Register: July 8, 1998, Volume 63, Number 130, Part II, Page 36993-37013.

**Table 7-16 Threatened and endangered species for the Oliver 2 Route**

Scientific Name	Common Name	State Status*
<i>Ophiogomphus anomalus</i>	Extra-striped clubtail	END
<i>Pandion haliaetus</i>	Osprey	THR
<i>Cygnus buccinator</i>	Trumpeter swan	END
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federal END)
<i>Dendroica tigrina</i>	Cape May warbler	SC/M
<i>Carduelis pinus</i>	Pine siskin	SC/M
<i>Lampsilis teres anodontoidea</i>	Yellow sandshell mussel	END
<i>Moxostoma valenciennesi</i>	Greater redhorse	THR
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Canis lupus</i>	Timber wolf	THR (federal END)

The following protection categories are designated by the DNR: END=endangered, THR=threatened. SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

## Local community

### Land use

About 23 percent of the Oliver 2 Route is located on public land of some kind. Twenty-one percent or 21 miles traverses county forestland while 1 percent or 1 mile is on state-owned land. The other 1 percent, 1 mile, is on other types of publicly owned land. Some segments of the route cross areas with zoning that would require a permit before building a transmission line. There are also several recreational trails and protected areas that may be affected by the proposed line. All of these subjects are discussed in more detail below.

### County forest plans

The Douglas, Washburn, and Sawyer County Forestry departments each have a 10-Year Land Use or Comprehensive Management Plan as well as an Outdoor Recreation Plan. These plans were reviewed to determine if and how the proposed transmission line would affect the plans. Local forest staff identified special use areas or ecological communities that might need special consideration if the Oliver 2 Route is approved.

### Douglas County Forest

Easements and leases for the construction of utility transmission lines are subject to approval by the Douglas County Forest Parks and Recreation Committee. Electric utilities will be encouraged to use existing corridors rather than develop new corridors. Underground installations are encouraged. Forest users should minimize damage to resources and aesthetics. The committee also addresses special maintenance or controlled access concerns, such as use of matting in wetlands or constraints on development of new roads.

Almost 15 miles of the proposed Oliver 2 Route is on Douglas County Forest land. This portion of the route does not parallel or share a ROW with any other infrastructure and would

require entirely new ROW. In a very remote area just south of Oliver, the proposed route crosses nine streams or rivers within a seven-mile stretch. Most of these streams or rivers are inaccessible by road. County forest personnel would have to be consulted before these rivers could be accessed by constructing new roads or crossed by construction equipment. More information about accessibility is covered later in this section of the EIS. Additional information on river and stream impacts is found in a separate section in this chapter that covers Natural Resources.

In general, Douglas County Forest staff did not identify any special use areas or special communities needing protection during or after construction of the proposed transmission line. Forestry staff would expect the use of BMP to protect designated resources on county forestland and would monitor construction to ensure strict use of these practices.

No permits for construction of new cabins have been issued for several years and all existing permits are being phased out by the end of the year 2000. For this reason the proposed line would have no impact on privately held cabins within the Douglas County Forest.

#### **Washburn County Forest**

The Washburn County Forest plan is a well-developed plan that breaks the forest into 30 units. Each unit has a plan describing and mapping the existing resources (flora, fauna, topography, geology, roads/trails, archeological/historical, etc.) and proposed uses (harvesting, development, and preservation) for these resources. Several of the forest units are designated non-motorized units. Visitors to this type of unit may not use motor vehicles of any kind in the unit. Logging contractors who have been granted a contract to cut timber, however, are allowed to use motor vehicles. Motor vehicles could also be used to construct a transmission line but the contractors would be required to use the same environmental protection practices required of logging contractors. These requirements include the BMP defined by the DNR, Bureau of Forestry.

About 4.3 miles of the Oliver 2 Route are on Washburn County Forest land. Only about a mile follows an existing corridor. Forest units affected by the Oliver 2 Route are described below.

In forest unit 4, the Black Brook Unit, the Oliver 2 Route (segment 356) crosses the Totogatic River and an old mining road. Because this is a unit with medium restrictions, motor vehicles may use this road. The Totogatic River, which is designated a County Wild and Scenic River, is managed using many of the same objectives identified for National Wild and Scenic Rivers, such as the Namekagon. The Totogatic River and its banks are designated an aesthetic zone. County forest management considers there to be an old growth reserve opportunity within 100 feet of the Totogatic River. The proposed crossing is currently inaccessible but is near a commercial cranberry bog. There are believed to be some historic copper mines and homesteads in unit 4 but they do not appear in the historic register. The County Forest Plan prohibits harvest of eastern hemlock, American elm and white cedar in this unit until regeneration is expected. Wolf activity has been observed in this forest unit in the past.

The Oliver 2 Route crosses one corner of unit 5 (segments 344 and 356) that also has medium restrictions. In unit 5, travel on roads is generally acceptable only in winter under frozen conditions due to a high potential for rutting. The proposed transmission line would not affect

any of the developed recreational features of the unit. The areas in unit 5 that are designated for special protection are not near the proposed route.

Unit 6 is also crossed by the proposed route. Several streams would be crossed in an area without roads. The proposed route would not affect any of the developed recreational features of the unit.

In unit 7, the Oliver 2 Route (segment 356) crosses through the heart of a primitive hunting area, honeycombed with walking trails and managed wildlife openings. This part of the route would require clearing of a new ROW corridor. No use of motorized vehicles is allowed in this unit. This area currently has a high potential for providing timber wolf habitat. Construction of the line through this area could limit this habitat potential. Frog Creek and Cedar Creek, which are present in this unit and would be crossed by the route, are considered very scenic.

The proposed Oliver 2 Route (segment 356) crosses a snowmobile trail in unit 8.

Unit 9 is an undeveloped area that contains three lakes, two of which are near proposed segments 355 and 353. This portion of the route would require clearing of a new ROW corridor. Part of the stipulation when this area was granted to the county forest was that it be kept undeveloped. A turn-of-the-century logging site is located in an area immediately around the proposed route. A tributary of Chippanazie Creek that would be crossed twice in this unit was designated an ERW by the DNR in 1995. This same stream is a class I trout stream. Harvesting of cedar, elm, or hemlock is prohibited in this forest unit unless regeneration is assured. There are several eagle and osprey nests located nearby.

The Oliver 2 Route also crosses units 19a and 30 but does not affect any developed or special resources.

In summary, construction of the Oliver 2 Route would have the most impact on units 7 and 9 of the Washburn County Forest. Resources in both of these units have been designated for special protection. In unit 7, it is the developed recreational uses that are protected, whereas in unit 9 it is the undeveloped character that is so designated. Although construction of a 345 kV transmission line would not physically restrict use of these forest units, the planned and actual character of each of these units would be harmed.

### **Sawyer County Forest**

The Sawyer County Forest 10-Year Plan assigns administration of the county forest to the Conservation Committee. Easements for public utilities must be considered by the Committee but are forwarded to the County Board for final decision. Underground installations for electric lines are encouraged. The committee would also address any special maintenance or controlled access concerns, such as use of matting in wetlands or criteria for development of new roads.

The proposed Oliver 2 Route would affect one unit of the Sawyer County Forest. A two-mile section of the route (segments 321-322) east of CTH C and east of Weirgor Lake crosses county forest land that is part of Weirgor Springs State Wildlife Area. This part of the route would require an entirely new ROW corridor.

No special use areas or special communities were identified as needing protection, but forest staff expect and would monitor for strict use of BMP on County Forest land affected by construction of the transmission line. BMP are used by logging operations and would be expected of any entity building a transmission line or associated access roads through Sawyer County Forest land.

### **Other county, state, and federal land**

The Oliver 2 Route (segment 384 along an existing pipeline corridor) cuts through 0.5 mile of Douglas County Special Use property around Balsam Creek. Special Use properties are managed by the County Forestry Department for sensitive resource concerns but are not specifically owned for forest management purposes. See the section on Natural Resources in this chapter of the EIS for more information on Balsam Creek.

The route also would pass between the Bean Brook State Wildlife Area and Flat Creek State Wildlife Area (segment 341 along an existing transmission line and rail corridor). Construction of the transmission line could have incremental visual and other aesthetic impacts on users of these wildlife areas.

The DNR owns 52 acres near the north end of Upper Holly Lake that would be bisected by the Oliver 2 Route (segment 332) along an existing transmission line corridor. This area was a fish rearing station, but it is no longer actively used or managed.

Weirgor Springs Wildlife Area was established in 1947 with the primary purpose of protecting the Weirgor watershed. Topographically, the property is a contrast of low, flat creek bottoms and high, steep hardwood uplands. Little Weirgor and Beaver Creeks form the arms of a Y-shaped drainage pattern that runs southeasterly through the property. The area between the creek bottoms is made up of predominantly steep escalating ridges of northern hardwoods. Alder shrub wetlands are the most common streambank vegetation. There are four main spring ponds. Three of them have been intensively managed to protect water quality and maintain a productive brook trout fishery in Weirgor Creek. Because of poor access little has been done with the wooded areas. It is now managed for ruffed grouse and other game hunting and trout fishing. The Oliver 2 Route would cross the wildlife area and the creek twice. One crossing (segment 312) would cross Weirgor Creek along an existing transmission line corridor. The other crossing would be a new corridor.

Commission staff is aware that one landowner on segment 373b, just east of Hwy 53, who has a Debt Cancellation Conservation Contract (FSA-1951-39) with the USDA, Farm Service Agency (FSA). The development rights to this land are now held by the government. The landowner, who has a loan from FSA, received some debt forgiveness in return for an agreement to not develop the designated property for a term 50 years. Specific language in the contract prohibits utility ROW or related facilities. An existing Northern Natural Gas pipeline runs along the southern edge of the property affected by this contract. If the landowner agreed to allow an easement on the property for construction of a transmission line north of the pipeline, it would violate the terms of the contract. The landowner's debt would then be reinstated with interest, and the FSA could require payment to restore the land and to cover its costs. The contract

would still be in force, since only the FSA or its successors has the right to release or modify the terms of the contract. It is not clear whether a utility could condemn this property. If the utility were allowed to condemn, the landowner may have to be made whole.

There are some wetlands in the general area – scrub/shrub, primarily wet soil with some standing water. The proposed Oliver 2 Route approaches the pipeline from the north (segment 384) and will therefore have to cross the pipeline somewhere along segment 384, 382, or 378. If the Commission approves the Oliver 2 Route it could be conditioned on use of a corridor south of the pipeline, in the vicinity of this property, in order to protect the non-development contract.

### **Recreation trails**

The Little Douglas County Recreation Trail is an abandoned rail bed designed for winter vehicle (snowmobile) use only. Gates at the road crossings and signage prevent other motorized vehicle use. Hunters traveling on foot also use the trail. The proposed crossing of the trail is accessible by walking the trail from CTH W. There is no existing infrastructure currently visible from the trail at the crossing location. The trail currently ends one mile northeast of this proposed crossing at a rail yard, but Douglas County is attempting to connect the trail with other existing trails in the area.

The Saunders Grade Trail runs parallel to CTH C and some railroad tracks at the point where the Oliver 2 Route crosses the trail (segment 384). This trail is used primarily by ATVs and snowmobiles. This area is generally open country with small farms but there is a screen of trees along much of the trail on one side and a raised rail bed on the other. The rail bed lends a “developed” presence to the trail but CTH C is barely visible from the trail except at intersections with other roads.

The Gandy Dancer Trail is crossed by the Oliver 2 Route (segment 384) at a point several miles from the nearest road and accessible only from the trail. Access to the proposed crossing was very difficult in 1999 due to wet conditions, mud and ruts filled with water, trees down from storms, and landowner disputes. The trail traverses some rough country, wetlands, steep hills with small streams in between, old rail beds with missing trestles and land owned by unhappy landowners. County forest staff is searching for new route segments for the trail. This trail passes through some very remote areas in places, making the addition of a 345 kV transmission line, where no corridor currently exists, very visible and incongruous.

The proposed route (segment 371) would cross the North Country Trail south and west of Solon Springs near the site where the trail crosses the new four-lane divided USH 53. The North Country Trail is part of an interstate trail system that, when fully developed, will extend 4,000 miles from New York to North Dakota. (See the section discussing the Oliver 1 Route Recreation Trails for more information about the North Country Trail.) This portion of the Oliver 2 Route would require a new ROW. Because it is a new corridor, this trail crossing would have more impact than the site where the Oliver 1 Route crosses, which is at an area where there are multiple existing corridors. However, the Oliver 1 Route may have a greater visual impact on another section of the trail further south. The developers of the North Country Trail are also concerned about the overall environmental impacts of the transmission line, beyond those associated with the trail. Because of the impacts related to the proposed Oliver 2 Route crossing

of the St. Croix River and wetland impacts east of the river, trail developers prefer the use of the Oliver 1 Route or the Oliver 3 Route.

The Oliver 2 Route would also cross the 75-mile long Tuscobia Falls State Trail, an abandoned rail bed that connects Park Falls and Rice Lake. The route (segment 323) crosses the trail on an existing pipeline corridor about one mile south of the LCO Indian Reservation. The Tuscobia Falls Trail is open to hiking, horseback riding, snowmobiling, and all-terrain vehicles.

Construction and maintenance of the proposed line on this route is not likely to change the use of any of these trails. There would be incremental aesthetic impacts on all users of the trails, but the line would not be a physical impediment to current trail uses. Special attention would have to be paid to placement of poles, especially any poles, such as corner structures, that require guy wires for support. Guy wires can be hazardous to trail users, especially users traveling at higher speeds.

#### **County and town/village/city land use plans and zoning**

Neither the counties nor the town/village/city governments along this route have land use plans. However, all three northern counties affected by this portion of the proposed line, Douglas (the village of Oliver is excluded), Washburn, and Sawyer, have zoning jurisdiction. The village of Solon Springs (Douglas County) and town of Radisson (Sawyer County) also have zoning jurisdiction. No zoning categories prohibit the presence of a transmission line. Consequently, construction of the proposed 345 kV line on the Oliver 2 Route would not require any changes in zoning by any of the local jurisdictions. However, in almost all zoning categories, the transmission line would require a conditional use permit. (See Table 7-17.) Because transmission lines are a “permitted use” (are not prohibited but require application for a permit) in all jurisdictions and because Wis. Stat. § 196.491(3)(i) exempts transmission lines from local zoning if the line is granted a CPCN, the conditional use permit process is primarily a way of providing public notification. In all jurisdictions a public hearing would be required as part of the permitting process.

**Table 7-17 Conditional use permitting process for the Oliver 2 Route**

	Conditional Use Permit Needed	Public Hearing
Douglas County	Yes	Yes
Washburn County	Yes, except in areas zoned Commercial	Yes
Sawyer County	Yes	Yes
Radisson	Yes	Yes
Solon Springs	Yes	Yes

Table 7-18 indicates where and for what length the Oliver 2 Route crosses land that is zoned in a category that would require application for a local conditional use permit. The Oliver 2 Route affects more areas that would require special use zoning permits than the Oliver 1 Route.



**Table 7-18 Oliver 2 Route location of segments that require local zoning permits**

<b>Jurisdiction/Type</b>	<b>Segment Number and Location</b>	<b>Length (miles)</b>
<b>Douglas County</b>		
Residential/recreational	368, T44N-R11W Section 20	.25
Residential	384, either side of STH 35 just south of Gustafson Road	.5
	373b, just west of CTH E between County V and Munnings Road	.2
	399, various	3.0
	398, near north intersection of USH 53 with Business 53	.25
	371, near intersection of Holly Lucius and Swanson Road just south of Solon Springs	.2
	363, near CTH Y and Lawler Bridge Road	.5
	363, near Eau Claire River and Wemisse Road	.3
	362, County G and East Mail Road	.2
Commercial/industrial	384, along the Nemadji and Black Rivers	.5
	399, near intersection of USH 53 and CTH B	.75
	399, south of intersection of USH 53 and CTH L	.2
	398, north of intersection of USH 53 and CTH AA, and just north of Solon Springs	.75
<b>Solon Springs</b>		
Industrial	398, just east of USH 53 north and south of intersection with CTH A	.75
<b>Washburn County</b>		
Resource conservation	356, shores of Totogatic River, Black Brook and Frog Creek	.2
	347, along Namekagon River, south of USH 63	.3
Residential	341, around Loon Lake	.5
	341, (mobile) south of Beaver Lake	.2
Residential/recreational	341, CTH E just south of Beaver Lake	.2
	344, near intersection of CTH E and Beaver Lake Road	.1
<b>Sawyer County</b>		
Residential	332cx, on McLeod Road near Boylan Road	.1
Residential/recreational	332cx, north shore of Sand Lake	1
	332ax, east shore of Sand Lake and west shores of Lower and Upper Holly Lake	1.75
	330, west shore of Ham Lake	.5
	329, east shore of Hungry Lake	.3
	326, east shore of Summit Lake and along Summit Lake Road	.3
<b>Radisson</b>		
F-1	321, public hunting and fishing grounds on Weirgor River	.5

## Roads

The need for and exact location of all new roads that might be needed to construct the proposed line on the Oliver 2 Route cannot be determined yet. One likely need for new roads would be to access stream crossings from both sides to avoid driving through the streambed with heavy construction equipment. Avoiding the need to drive equipment across streams minimizes the

degradation of water quality and the riparian ecosystem. The location of the Oliver 2 Route in relation to existing roads and the proximity of these roads to proposed stream crossings was reviewed. That information is provided below.

Almost half of the Oliver 2 Route would require the creation of a new corridor in relatively undeveloped areas. Consequently, there are numerous stream crossings in areas where there are few nearby roads. For many of these crossings it may be feasible to use a road some distance away and then use the newly developed corridor as a temporary road to reach the stream banks. However, where there are two stream crossings with no roads between them, the options are limited to construction of new roads or driving across the streams. DNR can issue permits for driving across streambeds where such a crossing would not cause harm. In locations where a permit is denied, building a temporary road from the nearest existing road or construction of a temporary bridge over the stream would be required.

Use of the newly developed corridor as a temporary road creates similar problems if the new corridor passes through wetlands. The COE may restrict access to some sensitive wetlands. In that case, more road construction would be required. If the DNR does grant a permit to cross a wetland, the permit may be conditioned on filing a construction plan that includes special procedures to avoid or minimize wetland damage. A previous section of this chapter has information about wetlands affected by this route.

Assuming that it is feasible to use an existing road for some distance and then an existing or newly developed corridor as a temporary road, there are still 22 river or stream crossings on the Oliver 2 Route that would require building at least a temporary bridge or road if the DNR determined that the stream could not be crossed by construction equipment. The locations where a road or bridge could be required are listed in the table below. The table also indicates the corridor status and identifies the closest road. The potential for wetland impacts caused by construction of temporary roads is covered in the Natural Resources section of this chapter.

The 13 locations described in Table 7-19 include potential crossings of 22 rivers or streams. Nine of the stream crossing locations would require development of a new ROW corridor. Thirteen crossings appear to have no public road close enough to be indicated. If a stream crossing permit were not granted, a temporary bridge could be the only solution for these crossings. Five crossings have extensive wetlands that further complicate accessibility. Areas on segments 365 and 368 would be particularly problematic due to nearby wetlands, sensitive areas, and long distances to the nearest roads.

Other new roads could be needed in other locations or for other reasons to complete construction of this route, but the needs are not known at this time.

**Table 7-19 Potential location of new roads to access rivers and streams for the Oliver 2 Route**

Location	Segment	Corridor Type	Distance
Two branches of the Little Pokegama	395/396	New corridor	0.5 mile to CTH W
Nemadji River and Balsam Creek	384	New corridor	0.75 miles from Deaham Road
Balsam Creek and the Black River	384	New corridor	0.5 mile to Fihn Road
West Bank of Stoney Brook	384	Existing pipeline corridor	0.25 miles from Gustafson Road west of intersection with STH 35
Two branches of Cooper Creek	384	Existing pipeline corridor	0.4 miles from Baumgartener Road, west of Hudadek
Two branches of Rocky Run Creek	382	Existing pipeline corridor	0.3 miles from Baumgartener Road east of Darrow Road
Two branches of the Little Amnicon River	378	Existing pipeline corridor	No obvious road
Amnicon River and Little Amnicon River	376	Existing pipeline corridor	0.5 miles to CTH K
Six branches of an Amnicon River tributary	373b	Existing pipeline corridor	No road close by
East shore of the St. Croix River	368	New corridor	No roads and extensive wetlands
Ox Creek	365	New corridor	No roads and extensive wetlands
Three crossings of Frog Creek	365	New corridor	Very inaccessible area, no roads, some wetlands
Two crossings of Chippanazie Creek	355	New corridor	Short distance from CTH M

### Agriculture

The types of agricultural use for the Oliver 2 Route would be the same as described for the Oliver 1 Route.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as an Appendix A to this document.

The amount of agricultural land potentially affected by the Oliver 2 Route is included in the table below. A comparison of the agricultural impacts of each of the Oliver routes is shown in the summary in Chapter 12.

**Table 7-20      Agricultural impact for the Oliver 2 Route**

Measure	Double Circuit	Parallel
Agricultural zones (miles)	28.4	28.4
New agriculture impact (miles)	9.4	11.2
New agriculture impact (acres)	160.5	182

Twenty-eight miles of the Oliver 2 Route would cross land zoned agricultural. Double circuit or parallel construction makes little difference on the Oliver 2 Route because there are so few segments that can be constructed parallel. In most cases the addition of the new 345 kV line as double circuit with the existing line (on the same poles) would require that the existing corridor be 0 to 20 feet wider. Parallel construction (a second set of poles, either single pole or H-frame, parallel to the existing line) would require an additional 105 to 115 feet of corridor. If the new 345 kV line were constructed along an existing pipeline or rail corridor on agricultural land, 98 to 132 feet of new corridor would be required.

Any additional corridor width would be “affected,” but not necessarily taken out of production. The actual amount of acreage lost to cultivation beneath a power line depends on several variables. (See the discussion on agriculture in Chapter 5.) In general, single pole structures remove significantly less land from production and are easier to maneuver around with farm equipment than H-frame or lattice structures.

More information on agricultural safety issues can be found in Chapter 5.

### **Visual**

The primary visual impact will be on those areas of the Oliver 2 Route that do not follow existing corridors. Nearly 48 miles of the route do not follow an existing corridor and would require the acquisition of 120 to 150 feet of new ROW. Most of this distance, about 30 miles, is in Douglas County. About 12 miles are in Sawyer County and 4.6 miles are in Washburn County.

The next level of visual impact would be on the portions of the Oliver 2 Route that are proposed to be adjacent to an existing pipeline corridor. Although there is an established cleared ROW, no above-ground or vertical infrastructure is visible. Because the pipeline companies may not allow overlap of the proposed transmission line ROW on the existing pipeline ROW, the corridor would probably have to be widened about 108 to 132 feet to accommodate the overhead 345 kV line and it would be a new visible feature in these areas. About 16 miles of the Oliver 2 Route would be located in a corridor with only an existing underground pipeline. Twelve miles are in Douglas County, 3.2 miles of this type of corridor are in Sawyer County, and 0.2 miles are in Washburn County.

About 6.1 miles of the proposed Oliver 2 Route are located along corridors that have an existing railroad line. The railroad companies may also be unwilling to have the transmission line ROW overlap the railroad ROW so the existing corridor would have to be widened by 98 to 122 feet. Rail corridors have more visible infrastructure than a pipeline but the visual impact is not vertical.

and often can't be seen from a long distance. The additional visual impact in these areas will be less than at existing pipeline corridors but more than where existing transmission line corridors are present. All of this type of corridor is in Washburn County.

The Oliver 2 Route also has about 16 miles that follows existing road corridors, primarily USH 53 in Douglas County. USH 53 is a four-lane divided highway that already has considerable visible infrastructure, including overhead signage. The addition of a 345 kV transmission line adjacent to the highway would, however, be a significant visual addition.

About 17 miles of proposed Oliver 2 Route would be located along an existing transmission line corridor. The existing transmission lines are lower voltage than the proposed line and the height of the existing lines ranges from 70 to 100 feet. If the new 345 kV line is built as double circuit, the corridor would only need to be widened about 20 feet, but the new poles would be 125 to 135 feet high, with corner poles as tall as 160 feet. If the new line is built parallel to the existing line the ROW would have to be increased by 90 to 115 feet and the new set of poles would be 85 to 105 feet high with corner poles 100 to 130 feet high.

The Oliver 2 Route would have more new visual impact than the Oliver 1 Route because so much more of it is located in areas where there is no existing infrastructure. About 48 percent of the Oliver 2 Route would require clearing an entirely new corridor, while only 17 percent of the Oliver 1 Route does not follow an existing corridor.

#### **Proximity of residences to the proposed centerline**

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics and property values, the number of structures within 300 feet of the proposed centerline is provided in Table 7-21. All of these issues are described in greater detail in Chapter 5.

**Table 7-21** Number of facilities within 300 feet of the Oliver 2 Route

Facility Type*	Double Circuit	Parallel Construction
Homes 0-50 feet	1	1
Homes 50-100 feet	6	6
Homes 100-150 feet	6	6
Homes 150-300 feet	40	39
<b>Total Homes</b>	<b>53</b>	<b>52</b>
Apartments 150-300 feet	1	1
Playgrounds 0-50 feet	1	1
Commercial/industrial/office 0-50 feet	3	3
Commercial/industrial/office 50-100 feet	3	3
Commercial/industrial/office 100-150 feet	2	2
Commercial/industrial/office 150-300 feet	5	5
<b>Total Commercial/Industrial/Office</b>	<b>13</b>	<b>13</b>
Agricultural outbuildings 0-50 feet	0	0
Agricultural outbuildings 50-100 feet	1	2
Agricultural outbuildings 100-150 feet	1	1
Agricultural outbuildings 150-300 feet	7	6
<b>Total Agricultural Outbuildings</b>	<b>9</b>	<b>9</b>
<b>Total Facilities</b>	<b>76</b>	<b>76</b>

\*There are no apartments, schools, daycare centers, hospitals, nursing homes, parks, or playgrounds affected by this route.

A summary in Chapter 12 compares the number of facilities within 300 feet of the Oliver 2 Route to the other Oliver routes.

### Historical and archeological sites

Four historic properties listed with the SHSW have been identified along the proposed Oliver 2 Route.

The SHSW agrees that three of the four properties would not be adversely affected by the project. One of the unaffected properties is a historic Euro-American archeological site or structure that could be avoided (located on segment 332). Two properties are prehistoric or historic sites (located on segments 332 and 341) that have already been surveyed and are not expected to be further affected by transmission structure installation.

One of the four properties is an archeological site that the SHSW agrees would require some survey work by a qualified archeologist if the project was approved and the approved route extended through it. The site is a woodland campsite or village (segment 371). In this situation, the applicants have already agreed to survey where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts at this location, the applicants agreed they

would relocate the structure in consultation with the SHSW to avoid any further disturbance by construction.

**Another area of concern**

The Washburn County Forest Plan describes one area on the Oliver 2 Route that is of historical interest but is not listed with the SHSW. While the SHSW intends to investigate the site eventually for potential listing, the county believes this site should be protected. The site is a turn-of-the-century logging site located near Chippanazie Creek that could be affected by ROW construction for the Oliver 2 Route (segment 355).

## Oliver 3 Route

### Detailed description

This route (Figures 7-9 and 7-10), approximately 92 miles long, follows the same path as the Oliver 1 Route from Oliver to where the route leaves Washburn County (segment 340). In Sawyer County it follows the same segments as the Oliver 2 Route until just south of Ham Lake (segment 330).

At the divergence of the transmission line and the Lakehead pipeline south of Ham Lake it turns southeast, following the existing 69 kV transmission line 9.5 miles. It crosses 4 miles of the LCO Indian Reservation, the Couderay River twice, Surette and Devils Creeks, STH 27/70 twice, and the Tuscobia State Trail. The proposed corridor would veer off the existing corridor for 1.8 miles around the intersections with Old Couderay Road, Weirgor Road, and Polish Road. The proposed corridor then rejoins the 69 kV transmission line and heads directly south for approximately 1.4 miles. The predominant land cover is forest. The Oliver 3 Route may not be a viable option if the LCO Reservation government would not allow expansion of the existing ROW on reservation land.

The route then follows the same path as the Oliver 2 Route (segment 312) south and then southwest, crossing Swan, Maple, and Little Wiergor Creeks, before ending at CTH C, just west of Exeland.

Figure 7-9 Oliver 3 Route (1 of 2)

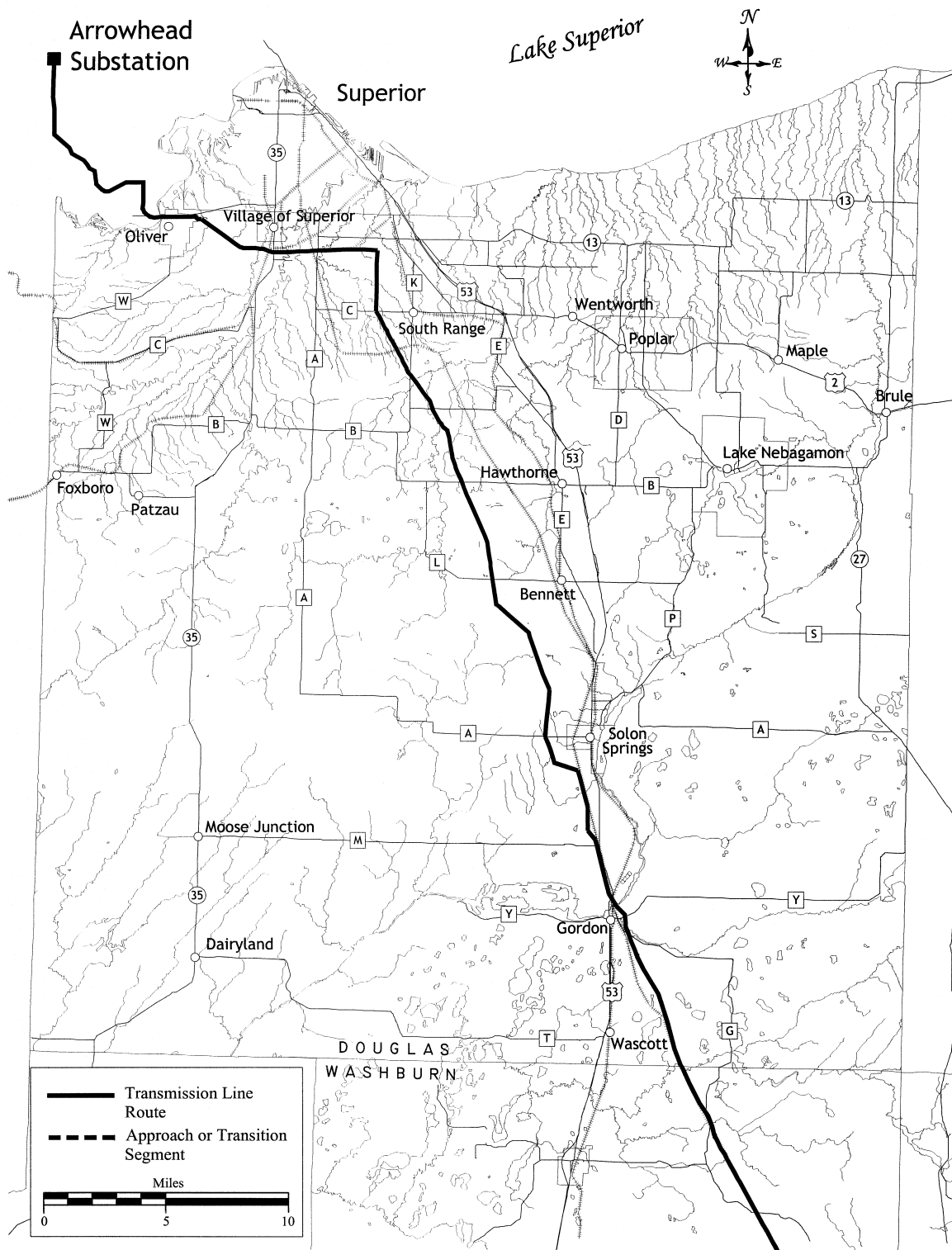
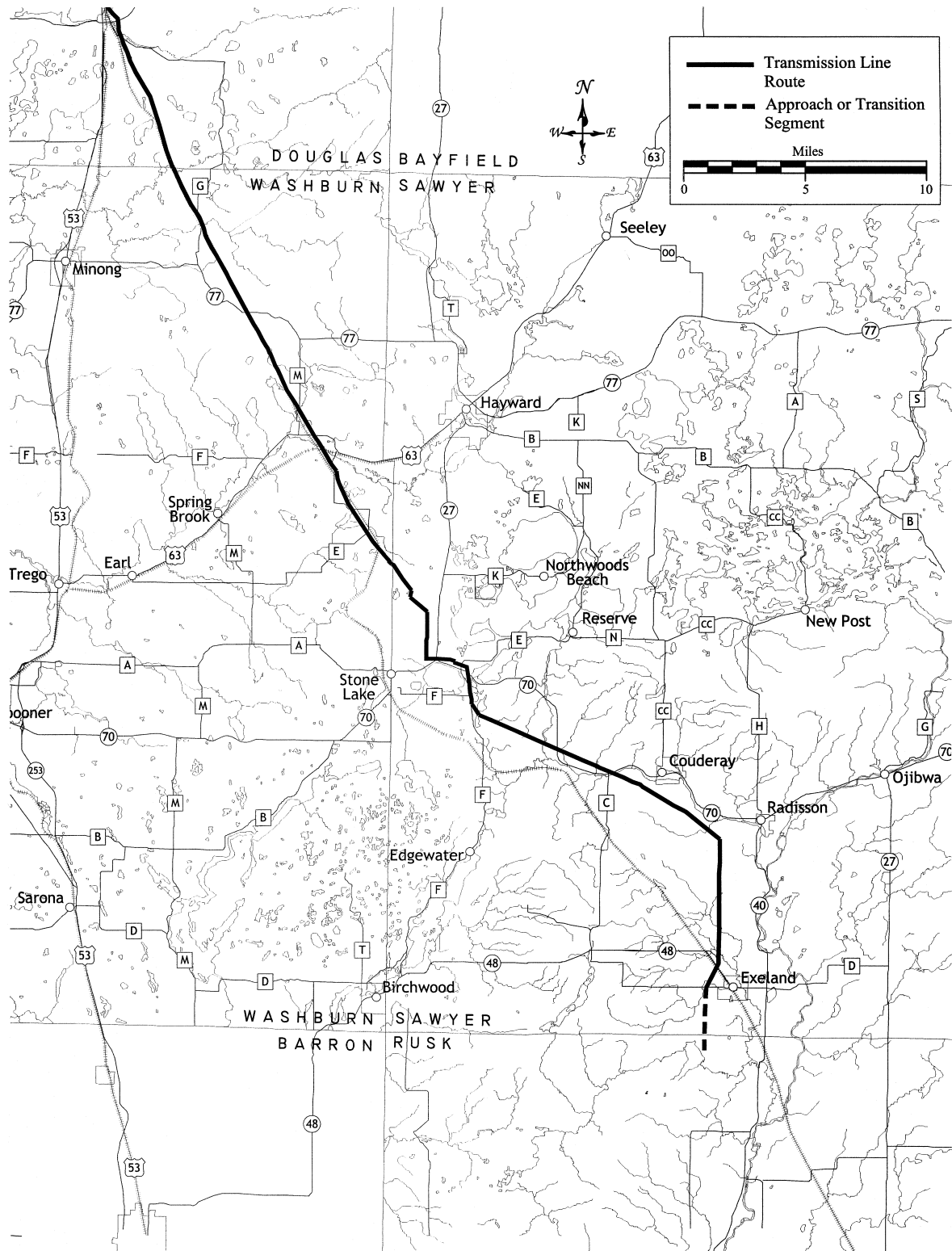




Figure 7-10 Oliver 3 Route (2 of 2)



## Natural resources

### Lakes

There are 12 lakes within 1,000 feet of the proposed Oliver 3 Route. They include: Grover Lake, Lily Pad Lake, Red Lake, Sugarbush Lake, Stanberry Lake, Loon Lake, Beaver Lake, Upper Holly Lake, Lower Holly Lake, Sand Lake, Ham Lake, and Hungry Lake.

These are the same lakes that appear on relevant segments of the Oliver 1 and Oliver 2 Routes. The only additional segment is 320 and there are no lakes within 1,000 feet on that segment.

### Rivers and streams

There are 38 river crossings on the Oliver 3 Route. Four of the crossings are waterways that have been designated as OERW<sup>207</sup> and nine are classed as trout streams. Ten of the crossings are inaccessible. There are only two new (no existing transmission line) stream crossings on this route and both have an existing rail line. This is considerably fewer than the 20 new crossings on the Oliver 1 Route and the 61 on the Oliver 2 Route. See the summary in Chapter 12 for a comparison of the environmental and social impacts of all the Oliver route options.

The rivers and streams listed in Table 7-22 are the same as those that appear on relevant segments of the Oliver 1 and Oliver 2 Routes. The additional segment (320) on the Oliver 3 Route that is not found on either of the other Oliver route options crosses four additional streams: the Couderay River, Surette Creek, Section 20 Creek, and Devils Creek. All four have an existing transmission line at the proposed crossing.

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<sup>207</sup> The DNR maintains a list of outstanding and exceptional resource waters (OERW) of the state. Outstanding resource waters (ORWs) include all national and state wild and scenic rivers. ORWs are defined as a lake or stream having excellent water quality, high recreational and aesthetic value, high quality fishing and free from point source or non-point source pollution. Exceptional resource waters (ERWs) are similar to ORWs in terms of water quality, recreational and aesthetic value and wildlife habitat but may be susceptible to future point source pollution. Both outstanding and exceptional resource waters (OERWs) provide unique environmental settings that have not been significantly affected by human activities. The designated streams are identified in the state administrative code.

**Table 7-22 Rivers and streams on the Oliver 3 Route (from north to south)**

St. Louis River	Branch of Amnicon River**	Chippanazie Creek
Unnamed stream	Branch of Silver Creek	Namekagon River*
Unnamed stream	Branch of Silver Creek**	Unnamed stream
Little Pokegama River	Branch of Silver Creek**	Bean Brook τ
Pokegama River	Branch of Park Creek**	Sissabagama Creek
Nemadji River**	Leo Creek	Couderay River
Crawford Creek**	St. Croix River	Surette Creek**
Branch of Bluff Creek	Eau Claire River	Section 20 Creek
Branch of Bluff Creek	Totogatic River <sup>208</sup>	Devils Creek **τ
Unnamed stream	Frog Creek	Swan Creek*τ
Unnamed stream	Sink Creek	Maple Creek*τ
Branch Little Amnicon River τ	Branch of Chippanazie Creek**τ	Little Weirgor Creek*τ
Branch Little Amnicon River τ	Branch of Chippanazie Creek**τ	

\*Designated Outstanding or Exceptional Resource Water.

\*\* Inaccessible – at least one bank of the stream cannot be accessed unless, a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed.

τ - Classified a trout stream.

Shading – New transmission line crossing - There is no existing transmission line on the proposed corridor at the crossing. In some cases there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no existing overhead structure present.

### Accessibility

A stream crossing is considered inaccessible when no public road exists between two streams. It is assumed that the existing or newly developed transmission line corridor can serve as a road and that heavy construction equipment can be moved along the corridor<sup>209</sup> at least until it reaches a river or stream. If there were a road somewhere between two streams, it is assumed that the equipment could be brought in along the road and then down the corridor to both stream banks. However, sometimes two streams are very close together or are located in an area with little development. In this case there are three possibilities: a temporary or permanent road could be built; a temporary or permanent bridge could be built; or the heavy equipment can be allowed to drive through the streambed to the other side.

The preferred access method will vary depending on the environmental sensitivity of the stream, the condition of the stream, and the environmental damage that might be caused by disturbing the streambed or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

<sup>208</sup> Designated a County Wild and Scenic River by Douglas County.

<sup>209</sup> If the corridor being used to move equipment from pole site to pole site is through wetlands there may be further accessibility concerns. See the Wetlands section later in this chapter. Use of private or logging roads are possible if arrangements are made with the owner. Some incremental impact is likely to occur since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

The few areas of the Oliver 1 Route with accessibility problems are also located on the Oliver 3 Route. The streams affected are the Nemadji River, Crawford Creek, and Chippanazie Creek. In addition to those sites, the Oliver 3 Route has one other area with an accessibility problem. There is no road between Surette Creek and Devils Creek, making one bank of each creek inaccessible. Since Devils Creek is a designated trout stream it would be the stream of greatest concern. (See the section on roads for the Oliver 3 Route later in this chapter.) The accessible streams on the Oliver 2 Route are also accessible on the Oliver 3 Route.

#### **Specific information about some of the rivers**

Not every stream crossing has been analyzed in detail but information about the rivers that are common to Oliver Routes 1 and 2 can be found in previous parts of this chapter.

#### **Wetlands**

Although the importance of wetlands is not always obvious to the casual observer, they serve several vital functions that benefit society. Wetlands store storm water runoff, enabling the recharge of groundwater sources. Wetlands filter sediments and pollutants from the air, precipitation and upstream sources, resulting in higher water quality in downstream water bodies and rivers. Wetlands provide food, cover, and nesting habitat for many species of fish and wildlife. This special habitat could be destroyed or at the very least would be decreased by development of ROW in a wetland, especially a wetland with no existing corridor. Power line structures and conductors can also pose a collision hazard for sandhill cranes, waterfowl, and other large water birds that frequent wetlands, especially under low light conditions or in poor weather. For this reason it is important to know how wetlands would be affected by construction of this project.

The Oliver 3 Route is proposed as a double circuit because parallel construction would not provide adequate advantage to justify use of LCO Reservation land.

**Table 7-23      Oliver 3 Route construction and wetland impacts**

Double circuit	53.5 acres of new non-forested wetland
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For analysis purposes, forested wetland impacts were analyzed and are discussed under the Forest section rather than in the Wetlands section. It is important that the impacts not be double counted. However, when considering total wetland impact, the non-forested and forested wetland impacts must be added together.

If the line were double circuited on the Oliver 3 Route, 22.5 acres of new forested wetland would be affected. Adding this to the new non-forested wetland impact would result in 76 acres of total new wetland impact. This is less new wetland impact than the comparable Oliver 1 (79 acres) and 2 (216.5 acres) Routes.

Affected area, of course, is not the only consideration. Quality of the wetland is also important. Because the information available on GIS maps only indicates wetland type and size and

Commission staff was unable to investigate every wetland in person, it was necessary to rely on local landowners, DNR staff, and county forest staff to identify especially sensitive or high quality wetlands.

Because the Oliver 3 Route makes more use of existing transmission line corridor than the other Oliver options, in most cases the affected wetlands have been disturbed before. There is only one mile of the Oliver 3 Route through non-forested wetland that has never had any infrastructure. Even existing corridors that have not been disturbed for many years could, however, have recovered to their former quality. The Oliver 3 Route has eight of the same sensitive wetland areas indicated for the Oliver 1 Route but avoids the Oliver 2 Route sensitive areas and there are no known sensitive wetlands on the segment unique to the Oliver 3 Route.

The size of a wetland affects the potential for impact. Wetlands that measure less than 800 feet along the ROW allow for placement of poles at either end of the wetland. The Oliver 3 Route has at least 23 wetlands (forested and non-forested) that are wider than 800 feet, making it difficult to construct a 345 kV transmission line without placing at least one pole in the wetland. Placing poles within a wetland requires that construction equipment get to the pole site. The equipment can get to those locations by using the existing or newly developed corridor through the wetland as a temporary road. Another option would be to build temporary roads into the wetland from the nearest existing road. If the wetland is long and narrow along the corridor this approach would disturb less wetland. Building temporary roads also causes environmental damage. Soil is often compacted and there is decreased hydrologic function, if fill is used to construct the roads. Soil disturbance and compaction can encourage proliferation of nuisance or non-native species. Compaction would also interfere with the filtering capacity and could cause a change in the water flow through the area. A change in the water flow could change the size or type of the wetland. Building roads in wetlands could trigger the need for a Section 404 COE permit. Road construction would be subject to the same requirements as pole placement in wetlands.

Accessibility of the wetlands affects the amount of impact. If there are several wetlands in an area with no roads between them, it may be necessary to drive all the way through one or more wetlands on the corridor to get to the next wetland. Again, temporary roads could be constructed from nearby roads to access each isolated wetland, but usually, where there is a string of wetlands with no roads in between, there are also few other roads nearby.

Moving construction equipment through a wetland can damage the ability of wetlands to function as they should. Heavy machinery used for clearing trees and brush, drilling holes, hauling cement and setting poles can crush wetland vegetation and compact wetland soils. Soil compaction reduces the water-holding capacity of the soil and may result in increased runoff. The applicants could be required to construct in wetlands only when the ground is frozen, to use matting under equipment in all wetlands, to restore the wetland to its original condition, including replanting of some areas, and to use special techniques to prevent transport of undesirable species from one location to another. The Commission can also require these procedures as part of its approval process.

The section on Water Resources in Chapter 5 has a description of the state (DNR) and federal (COE) laws that protect wetlands, the types of wetlands are eligible for special consideration, and how the formal permitting process would work. It also describes the additional authority of the Commission to protect water resources.

#### **Inaccessible wetlands**

There are six inaccessible wetlands (forested and non-forested) on the Oliver 3 Route, one it shares with the Oliver 1 Route and five that are on the additional segment (320). Four of the inaccessible wetlands are located on the LCO Reservation.

#### **Sensitive wetland areas**

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) may take longer to recover than other types of wetlands containing emergent vegetation. The Oliver 3 Route crosses 1.7 miles of sensitive wetland but all on ROW with existing corridor (mostly existing transmission lines). The largest concentration of sensitive wetlands is on segments 367 (0.9 mile) and 360 (0.3 mile). Avoidance of these areas or requiring the most effective mitigation techniques could be warranted. Since the main issue is long-term recovery, there may be less impact on this route than on the Oliver 2 Route, where there is only 0.7 miles of sensitive wetland, but it is all on new ROW. See Chapter 5 for more information about sensitive wetlands.

#### **High quality wetlands**

There are eight wetland (forested and non-forested) areas that are considered either high quality, sensitive, or are associated with OEWR. These are the same as the first eight listed for the Oliver 1 Route.

Construction of a transmission line through these wetlands and probably others could require special construction techniques, careful placement of poles, and mitigation of any impacts. It may be necessary to require that the applicants purchase new high quality wetland properties that would be given protected status, to compensate for the loss of prime wetland.

#### **Forests**

Forests provide recreational opportunities, wildlife habitat, fuel, habitat for rare plants and animals, timber, and pulp for the paper industry. Building a major high-voltage power line would require clearing many acres of trees and shrubs. Depending on where it occurs, this clearing could cause general loss and degradation of wooded habitat, pulp and timber losses and forest fragmentation.

Degradation can occur when invasive species are carried into a forest inadvertently by construction equipment and when soil and light conditions are altered so as to encourage growth of weedy species. This can result in a loss of plant and animal diversity. Trimming and clearing of trees at certain times of the year can also contribute to the spread of disease.

The production of trees for pulp and timber use is an important industry in northwestern Wisconsin. Because transmission line ROWs must be kept clear of woody vegetation that grows taller than 10 to 12 feet, the area within the ROW would be permanently lost as a site for pulp and timber production. (See Chapter 5 for more information about impacts to forests.)

Table 7-24 summarizes the amount of forest impact for the Oliver 3 Route.

**Table 7-24 Forest impacts for the Oliver 3 Route**

	Double Circuit
New* wetland forest crossed (miles)	0.6
New* upland forest crossed (miles)	2.9
<b>Total New* Forest Crossed (miles)</b>	<b>3.5</b>
New* wetland forest cleared (acres)	22.5
New* upland forest cleared (acres)	108.5
<b>Total New Forest Cleared (acres)</b>	<b>131.0</b>
<b>Total Forest With no Previous Corridor (miles)</b>	<b>1.6</b>

\*No corridor currently exists of any kind.

This route was only analyzed as a double circuit line. This route appears to have some environmental advantages over the other routes only if it is constructed as a double circuit line. Double circuit construction generally requires no more than 20 additional feet of ROW width, while parallel construction can require up to 120 feet of additional ROW. The acres shown here include the area that would have to be cleared to widen an existing corridor as well as acres of new corridor where none existed before. Where there is no existing corridor (3.5 miles on the Oliver 3 Route), the new corridor would be 120 to 150 feet wide depending on the pole type.

#### **Forest fragmentation impact**

An analysis of the forest fragmentation potential for the Oliver 3 Route was completed as described in Chapter 6. Seven blocks of forest larger than 1,000 acres and with forest/wetland cover greater than 70 percent were identified along the Oliver 3 Route. In all of these blocks, an existing corridor is on or adjacent to the Oliver 3 Route, indicating that the most serious type of fragmentation is not likely to occur. The summary in Chapter 12 has a comparison of the forest fragmentation impact of all three routes.

Table 7-25 identifies the seven blocks greater than 1,000 acres with greater than 70 percent forest/forested wetland coverage that already have some type of corridor present on or adjacent to the Oliver 3 Route. In these blocks, the existing corridor already fragments the block but a wider corridor has the potential to incrementally affect the forest block. There may be some species present that are not sensitive to the fragmentation caused by the existing corridor width but would be affected by a wider corridor. The amount of incremental impact cannot be determined without a much more detailed examination of existing habitats and species.

**Table 7-25 Existing ROW with potential for incremental forest fragmentation; Oliver 3 Route**

Block #	Segment #	Size (acres)	% Cover	Primary Types
2	372	1,000	84%	Aspen and other deciduous
3	372	1,000	81%	Aspen and coniferous
4	372	1,000	82%	Aspen and other deciduous
7	357	9,100	91%	Aspen and other deciduous
8	357	10,000	83%	Aspen and mixed deciduous/coniferous
13	320	5,000	93%	Aspen, oak, and other deciduous
14	320	4,000	91%	Aspen, red pine, maple, and other deciduous

Blocks 13 and 14 are on the portion of the proposed route that crosses the LCO Reservation on an existing transmission line corridor.

Further analysis of forest fragmentation potential was done using a forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential greatly increases when clearing ROW through these smaller forest blocks is considered. At least 9 blocks of this size have been delineated on this route.<sup>210</sup> While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200 to 400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

Only one of these blocks would require creation of a new corridor. The potential for fragmentation on the other eight would be incremental, due to the presence of existing infrastructure in the corridor.

#### **Industrial forest**

There are two areas on the Oliver routes that have concentrations of industrial forest. This is corporate owned and operated forest production, primarily chipping or pulping for paper products. One area with a concentration of industrial forest, primarily owned by Nekoosa and Mosinee, is along the proposed route in Douglas County, north and south of Solon Springs and Gordon. Proposed segments along the Oliver 3 Route cross 3.75 miles of industrial forest in Douglas County. A second area where there is a concentration of industrial forest is in Sawyer County between the LCO Reservation and Exeland. In this area the industrial forest is primarily owned by Futurewood Corporation. Proposed segments along the Oliver 3 Route avoid the Futurewood properties but cross 0.5 mile of Ort Lumber Inc. and 0.5 mile of Nekoosa property. See Chapter 5 for an explanation of the impacts on industrial forest.

#### **Wildlife**

The proposed transmission line would have the potential to impact wildlife through direct harm to some species and by altering the suitability of wildlife habitat. Construction activities can be

<sup>210</sup> These blocks are mutually exclusive of the 1,000 acre+ blocks and thus have not been double counted for this analysis.



noisy for a long enough period to discourage nesting or burrowing. Machinery and workers could crush vegetation that provides food, nesting sites, and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats of stream fauna. ROW clearance and line construction near lakes, rivers and streams can cause damage to fauna habitat from erosion and siltation. Transmission line corridors can fragment habitat by converting woodland to shrub and grassland (see the Forest section for information on forest fragmentation) or degrade habitat through introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near rivers and streams can drift or run off, polluting the water. Transmission line conductors, structures, and associated guy wires pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Oliver 3 Route are described below.

The timber wolf is classified as a threatened species in Wisconsin. In central Douglas County the Oliver 3 Route crosses the edge of the territory of the Moose Lake Pack on an existing transmission line corridor. In northern Washburn County the route crosses through the middle of the territory of the Frog Creek Wolf Pack on an existing transmission line and rail corridor. Timber wolves avoid areas of human activity. Transmission line construction activity could drive the wolves away from this part of their territories, at least during the construction phase. Wolf pack dens tend to be within the interior 25 percent of each territory, located on high ground within a wetland complex, and usually at least one kilometer from an improved road. The Oliver 3 Route proposed corridor is near the center of the Frog Creek Pack territory but, because of the existing railroad corridor, the den would be more likely to be located near the Oliver 2 Route, which is about 1.5 miles to the east.

The Oliver 3 Route crosses several rivers and wetlands that support threatened and endangered species, including mussels and plants. Impacts to these species could be avoided if construction equipment does not enter these rivers or wetlands and if proper erosion control measures are implemented. Specific impacts on aquatic species in streams and wetlands, including threatened and endangered species, will be determined by DNR. If the applicants file for a permit to cross a stream the DNR will determine the need for further review for the presence of aquatic threatened and endangered species under Wis. Stat. § 30.29. If the applicants are required to get a Section 404 COE permit to cross wetlands, the DNR will determine the need for further review for the presence of threatened or endangered species under Wis. Admin. Code ch. NR 103. If necessary the DNR can deny a permit or require mitigation procedures to protect any threatened or endangered species. See Chapter 5 for a more detailed description of the river and stream permitting processes.

Bird strikes are also a concern where the line would span rivers. Bald eagles and osprey were observed on the Eau Claire, St. Croix, and the Namekagon Rivers and could be present at many other locations within the project area. These birds are listed on state and federal threatened and endangered species lists. Rivers and their associated wetlands can also serve as corridors for daily and migratory flights by birds. There are two significant bird areas, identified by the Nature Conservancy, located on the Oliver 3 Route. These areas support mating pairs of rare game and non-game birds and are considered important to their survival. One area (Black/Belden Swamp-Bear Lake) is located north and west of Solon Springs and the other area

(Brule-Jack Pine) is located south and northeast of Solon Springs. Also, the Douglas County Wildlife area near Solon Springs is a higher, drier area managed as sharptail grouse habitat. The proposed route follows an existing transmission line corridor through all of these areas, but there would be more structures and lines and potentially higher lines than at present. Placing markers on the wires of transmission lines in well known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with lines.

The wood turtle, a state-threatened species, has been observed in the Namekagon River and the St. Croix River. Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction near the river during the egg laying and hatching period from June to late September.

There have been sightings of Canada lynx in northwest Wisconsin. Any elevation in the level of human access into a forest where lynx are present is a significant threat to their viability. Any increased likelihood of lynx encountering people (such as new access corridors) could result in displacement from their habitat or possible injury or death by intentional or unintentional shooting, trapping, or vehicular accident. Changes in the forest habitat that encourage the presence of bobcats and coyotes will decrease the lynx population.<sup>211</sup>

Table 7-26 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. As noted above, more surveys for aquatic threatened or endangered species may be under taken by DNR as part of any permit review.

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<sup>211</sup> USFWS Proposed Rule, Canadian Lynx, Federal Register: July 8, 1998, Volume 63, Number 130, Part II, Page 36993-37013.

**Table 7-26 Threatened and endangered species for the Oliver 3 Route**

Scientific Name	Common Name	Status*
<i>Ophiogomphus anomalus</i>	Extra-striped clubtail	END
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federal END)
<i>Pandion haliaetus</i>	Osprey	THR
<i>Dendroica tigrina</i>	Cape May warbler	SC/M
<i>Carduelis pinus</i>	Pine siskin	SC/M
<i>Lepomis megalotis</i>	Longear sunfish	THR
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Canis lupus</i>	Timber wolf	THR (federal END)
<i>Ophiogomphus bowei</i>	Pygmy snaketail	THR
<i>Lampsilis teres anodontoides</i>	Yellow sandshell mussel	END
<i>Petasites sagittatus</i>	Arrow-leaved sweet-coltsfoot	THR
<i>Ranunculus cymbalaria</i>	Seaside crowfoot	THR
<i>Ranunculus gmelinii</i>	Small yellow water crowfoot	END
<i>Parnassia palustris</i>	Marsh grass-of-parnassus	THR
<i>Eleocharis nitida</i>	Slender spike-rush	END
<i>Sparganium glomeratum</i>	Northern bur-reed	THR

\*The following protection categories are designated by the DNR: END=endangered, THR=threatened. SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

## Local community

### Land use

Thirty-one percent of the Oliver 3 Route is located on public land of some kind. About 26 percent or 24.5 miles traverses county forestland while 2 percent or 2.3 miles is on state-owned land. The other 3 percent, 2.6 miles, is on other types of publicly owned land. Some segments of the route are proposed to cross areas with zoning that requires application for a permit before a transmission line can be built. There are also several recreational trails and protected areas that would potentially be affected by the proposed line. All of these subjects are covered in more detail below.

### County forest plans

The Douglas, Washburn, and Sawyer County Forestry departments each have a 10-year Land-Use or Comprehensive Management Plan as well as an Outdoor Recreation Plan. Those plans were reviewed to determine whether the proposed transmission line would affect any of those plans. Commission staff worked directly with the local forest staff to identify any special use areas or ecological communities that might need special consideration if the Oliver 3 Route were approved.

**Douglas County Forest**

The Oliver 3 Route affects the same Douglas County Forest resources as the Oliver 1 Route. (See Oliver 1 Route Land Use section.)

**Washburn County Forest**

The Oliver 3 Route affects the same Washburn County Forest resources as the Oliver 1 Route. (See Oliver 1 Land Use section.)

**Sawyer County Forest**

The Oliver 3 Route has no impact on Sawyer County Forest land or resources.

**La Courte Oreilles Reservation**

The Oliver 3 Route follows an existing transmission line corridor through the reservation and continues following this line further south toward Exeland. Use of the existing transmission line corridor through the reservation, especially if the new line is double circuited, minimizes the need for new ROW and affects fewer acres of wetland, forest, and agricultural land. About 20 feet of additional ROW would be needed where the route crosses reservation land. NSP was planning to submit a proposal to rebuild the existing line to 161 kV but has decided to wait until a decision is made about the proposed Arrowhead-Weston line. If the applicants are granted a CPCN and the Oliver 3 Route is the preferred route, NSP wants to upgrade its existing line to 161 kV.

The applicants may not have condemnation authority on tribal lands because of tribal sovereignty.

**Other public lands**

The Oliver 3 Route affects the same other public lands as the Oliver 1 Route in Douglas and Washburn Counties. (See Oliver 1 Route Land Use section.) It also affects DNR land in the Weirgor Springs State Wildlife Area, but unlike the Oliver 2 Route it only crosses the area at one location (segment 312, which is an existing transmission line corridor). See the Oliver 2 Land Use section for a description of this wildlife area.

**Recreation trails**

The Oliver 3 Route affects the same recreation trails as the Oliver 1 Route in Douglas and Washburn Counties. (See Oliver 1 Route Land Use section.)

In Sawyer County the Oliver 3 Route also crosses the 7-mile long Tuscobia Falls State Trail, an abandoned rail bed that connects Park Falls and Rice Lake. Segment 320 crosses the trail on an existing transmission line corridor near Couderay Road, 1.5 miles east of CTH C. The trail is open to hiking, horseback riding, snowmobiling, and all-terrain vehicles.

Construction of the proposed line on the Oliver 3 Route would not change the use of any of these trails. There would be aesthetic impacts on all users of the trails, but the line would not be an impediment to current trail uses. Special attention would have to be paid to placement of

poles, especially any poles, such as corner structures, that require guy wires for support. Guy wires can be hazardous to trail users, especially users traveling at higher speeds.

### **County and town/village/city land-use plans and zoning**

Beyond the county forests, neither the counties nor any of the town/village/city governments along this route have land use plans. However, all three northern counties affected by this portion of the proposed line, Douglas (the village of Oliver is excluded), Washburn, and Sawyer, have zoning jurisdiction. The village of Solon Springs (Douglas County) and town of Radisson (Sawyer County) also have zoning jurisdiction. In all cases there is no prohibition of transmission lines in any zoning category. However, in almost all zoning categories, a transmission line would be considered a conditional use, requiring application for a permit. (See Table 7-27.) Because transmission lines are a “permitted use” (not prohibited but require application for a permit) in all jurisdictions and because Wis. Stat. § 196.491(3)(i) exempts transmission lines from local zoning if the line is granted a CPCN, the conditional use process is primarily a way of providing public notification. In all cases a public hearing would be required. Consequently, construction of the Oliver 3 Route would not require any changes in zoning by any of the local jurisdictions.

**Table 7-27 Conditional use permitting process for the Oliver 3 Route**

	<b>Conditional Use Permit Needed</b>	<b>Public Hearing</b>
Douglas County	Yes	Yes
Washburn County	Yes, except in areas zoned Commercial	Yes
Sawyer County	Yes	Yes
Radisson	Yes	Yes
Solon Springs	Yes	Yes

Table 7-28 indicates where and for what length the Oliver 3 Route crosses land that is zoned in a category that requires application for a local conditional use permit.

**Table 7-28 Location of segments that require local zoning permits for Oliver 3 Route**

<b>Jurisdiction/Type</b>	<b>Segment # and Location</b>	<b>Length (miles)</b>
<b>Douglas County</b>		
Resource conservation	393, around Nemadji River north of County C	0.6
Residential	372, various	2-3
	367, south of Solon Springs	0.4
	360, in town of Gordon	0.75
Commercial/industrial	360, in town of Gordon	0.3
	367, east of Solon Springs airport	1.0
<b>Washburn County</b>		
Resource conservation	357, around Frog Creek	0.1
	346, around the Namekagon River, south of Hwy 63 and east of County E	0.6
Residential	346, east of County E just north of intersection with Beaver Lake Road	0.1
	341, around Loon Lake	0.5
	341, (mobile) south of Beaver Lake	
Residential/recreational	359, around Totogatic River	0.1
	346, south of the Namekagon River and just east of County E	0.3
	341, County E just south of Beaver Lake	0.2
	343, near intersection of County E and Beaver Lake Road	
Industrial	359, south of the Totogatic River and east of Totogatic Road and the rail corridor, owned by Lakehead Pipeline Company	0.28
<b>Sawyer County</b>		
Residential	332cx, on McLeod Road near Boylan Road	0.1
Residential/recreational	332cx, north shore of Sand Lake	1.0
	332ax, east shore of Sand Lake and west shores of Lower and Upper Holly Lake	1.75
	330, west shore of Ham Lake	0.5
	320, between Ham and Hungry Lake	0.6
	320, south of Couderay	0.5
	320, south of Couderay	0.6
Commercial/industrial	320, south of Couderay	0.4
Radisson		
Forestry	320, south of Cemetery Rd., east of Weigor Road	0.5

## Roads

The need for and exact location of all new roads that might be needed, for various purposes, in order to construct the proposed Oliver 3 Route cannot be determined yet. One likely need for new roads would be to access stream crossings. It is important to avoid heavy equipment driving through streams and degrading the quality of the water and the riparian ecosystem. New roads may be needed for other reasons, such as inaccessible wetlands, but discussion of specific roads is too uncertain to be included in this EIS. See the Oliver 3 Route Natural Resources, Wetlands section for more information about roads and wetlands for this route.

**New roads to protect river and stream habitat**

The Oliver 3 Route would require the same two roads described for the Oliver 1 Route. (See more detailed description in the Oliver 1 Route section on roads and rivers and streams.) One road would access the east bank of the Nemadji River and the west bank of Crawford Creek (segment 393). The second road would provide access to two crossings of Chipanazee Creek on segment 357. The segments shared with the Oliver 2 Route do not have any inaccessible waterways that would require a road. The one segment unique to the Oliver 3 Route (segment 320) has one place where there are two streams with no road between them.

- Between Devils Creek and Surette Creek – If a new road is necessary because neither stream can be crossed by construction equipment it could approach the existing transmission line corridor from STH 27/70, which is about 0.5 mile away.

**Agriculture**

The types of agricultural use for the Oliver 3 Route would be the same as described for the Oliver 1 Route.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as an Appendix A to this document.

The amount of agricultural land potentially affected by the Oliver 3 Route is included in the table below. A comparison of the agricultural impacts of each of the Oliver routes is included in the summary in Chapter 12.

**Table 7-29      Agricultural impact for the Oliver 3 Route**

Measure	Double Circuit
Agricultural zones (miles)	29.9
New agriculture impact (miles)	3.0
New agriculture impact (acres)	73.0

The Oliver 3 Route is proposed for double circuit construction only. The Oliver 3 Route has the least agricultural impact because it uses existing transmission line corridors more than the Oliver 1 and 2 Routes.

If the new 345 kV line were constructed along an existing pipeline or rail corridor on agricultural land, 98 to 132 feet of new corridor would be required depending on the pole type used. The additional corridor width may be “affected,” but not necessarily taken out of production. The

actual amount of acreage lost to cultivation beneath a power line varies based on several variables. (See discussion on agriculture in Chapter 5) In general, single pole structures remove significantly less land from production and are easier to maneuver around with farm equipment than H-frame or lattice structures.

More information on agricultural safety issues can be found in Chapter 5.

### **Visual**

The primary visual impact would be on those areas of the Oliver 3 Route that do not follow existing corridors. Only 7 percent of the length of the route, 6 miles, has no existing corridor and will require purchase of all new ROW where none existed before. Half of this land is located in Douglas County, the other half in Sawyer County.

The next level of visual impact would be on the portions of the Oliver 3 Route that are proposed to be located on existing corridors where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical infrastructure is visible. Because the pipeline companies would not allow overlap of the proposed transmission line ROW with the existing pipeline ROW, the new corridor would be considerably wider and contain a very visible transmission line. Less than one mile of the proposed Oliver 3 Route would be located in a corridor with only an existing underground pipeline. All of it is in Douglas County.

About 6.4 miles of the Oliver 3 Route are along corridors that have only an existing railroad line. The railroad companies are also unwilling to have the transmission line ROW overlap the railroad corridor, so the ROW would have to be widened 98 to 122 feet. Rail corridors have more visible infrastructure than a pipeline but the visual impact is not vertical, and cannot often be seen from very far away. The additional visual impact here will be less than at existing pipeline corridors but more than at existing transmission line corridors. All of the proposed line parallel to only a railroad would be in Douglas County east of Oliver and south of Superior.

The other 86 percent, about 79 miles, of the proposed Oliver 3 Route would be located where there is an existing transmission line. These existing transmission lines are lower voltage lines. The height of the existing lines ranges from 70 to 100 feet. Wherever the 345 kV line is built as double circuit the corridor will only need to be widened by about 20 feet but the new poles would be 125 to 135 feet tall, with corner poles as tall as 160 feet. Wherever the new line is built parallel to the existing line the ROW will have to be increased by 75 to 115 feet. The second set of poles will be 85 to 105 feet high with corner poles 100 to 130 feet high.

See the summary section in Chapter 12 for a comparison of the visual impacts of all the Oliver Routes.

### **Proximity of residences to the centerline**

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics, and property values, the number of structures within 300 feet of the proposed center line is provided in Table 7-30. All of these issues are described in greater detail in Chapter 5.



The summary in Chapter 12 compares the number of facilities within 300 feet of the Oliver 3 Route to the other Oliver routes.

**Table 7-30 Number of facilities within 300 feet of the Oliver 3 Route**

Facility Type*	Double Circuit
Homes 0-50 feet	1
Homes 50-100 feet	6
Homes 100-150 feet	9
Homes 150-300 feet	47
<b>Total Homes</b>	<b>63</b>
Commercial/industrial/office 0-50 feet	3
Commercial/industrial/office 50-100 feet	5
Commercial/industrial/office 100-150 feet	1
Commercial/industrial/office 150-300 feet	6
<b>Total Commercial/Industrial/Office</b>	<b>15</b>
Agricultural outbuildings 0-50 feet	0
Agricultural outbuildings 50-100 feet	1
Agricultural outbuildings 100-150 feet	0
Agricultural outbuildings 150-300 feet	8
<b>Total Agricultural Outbuildings</b>	<b>9</b>
<b>Total Facilities</b>	<b>90</b>

\*There are no apartments, schools, day care centers, hospitals, nursing homes, parks, or playgrounds affected by this route.

### Historical and archeological sites

There are thirteen historic properties listed with the SHSW that have been identified along the proposed Oliver 3 Route. The SHSW agrees that ten of the thirteen properties would not be adversely affected by the project. Two are cemeteries, the Elbow Bend Cemetery and the Gordon Memorial Cemetery, that could easily be avoided by the transmission line. Two more properties are historic Euro-American archeological sites or structures (segments 332 and 357) that could also be avoided. One is a tavern of historic cobblestone construction listed on the National Register of Historic Places (segment 367), but it is located where the new line would replace an already existing transmission line that runs beside it. Five other properties (three on segment 377, one on segment 332, and one on segment 341) are prehistoric or historic sites that have already been surveyed and are not expected to be further affected by transmission structure installation.

Three of the ten properties are archeological sites that the SHSW indicates would require some survey work by a qualified archeologist if the project was approved and the approved route extended through any of them. Two of the sites are prehistoric lithic artifact sites (both on segment 360). One is a logging camp from the turn of the century (segment 357). In each of these situations, the applicants have already agreed to have the survey done where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts in any of these

areas, the applicants agree to relocate the structure in consultation with the SHSW to avoid any further disturbance by construction.

#### **An additional area of concern**

The Washburn County Forest Plan describes one area on the Oliver 3 Route that is of historical interest but is not listed with the SHSW. While the SHSW intends to investigate the site eventually for potential listing, the county believes this site should be protected. The site is an area where there are copper mine shafts and old Euro-American homesteads near segment 357.

## **Unused segments**

Some of the segments included in the application for the proposed project are not part of the three described Oliver Sector routes but have been reviewed by Commission staff. Several of these segments provide viable alternatives to one or more of the route segments, while others provide options for connecting one route with another within a sector or between sectors. Alternatively, some of the unused segments are no longer under consideration because they provide no tangible benefits for reducing environmental impacts, costs, or increasing reliability. Some of the unused segments that lie within the Oliver Sector are described below:

**Table 7-31 Oliver Sector - segments not on routes but still viable**

<b>Segment Number</b>	<b>Notes</b>
386	This segment heads southeast along the Lakehead pipeline ROW starting at the DM&IR Railroad. It extends approximately 2.9 miles, crossing two branches of Bluff Creek and ending at segment 379. The area is mostly forested with a short section of agricultural land. The DNR has concerns about wetlands in this area and arranged for some endangered plant survey work by a local expert botanist.
354	This segment extends southeast approximately 4,300 feet starting at CTH M, crossing Chippanazie Creek, and then staying north of Stanberry Lake. The segment would be double circuited and it would include the relocation of the existing line over Stanberry Lake. The area is primarily forested. This segment could be a short alternate connector between the two main routes and would allow the Oliver 1 Route to bypass Stanberry Lake.
348	This segment extends south approximately 2,700 feet across USH 63, connecting segments 346 and 353. The area consists of a mixture of agricultural and forested land. This segment would allow the Oliver 2 Route to connect to the existing transmission line crossing of the Namekagon River instead of the rail crossing.
345	This segment extends southeast approximately 1,700 feet between the Wisconsin Central Railroad and the existing NSP 161 kV transmission line. The area consists of forested land. This segment is an alternate connector between the Oliver 1 and 2 Routes.
342	This segment extends southeast along the Lakehead pipeline. The segment then runs west of the Wisconsin Central railroad (segment 341) passing near King Lake, crossing CTH E twice (once near Bean Lake), and returning to the pipeline and railroad ROW for a total distance of 4.3 miles. The area is primarily forested land. This segment is an alternative to segment 341. This segment would require twice as much new corridor, and affect twice as much new forest, wetland, and agricultural land. It would also have more visual impact. This segment has one historic property in close proximity to the proposed line that is listed with the SHSW. The property is a prehistoric or historic site that has already been surveyed and can be avoided. It will not require further survey work.

Segment Number	Notes
332b	This segment starts at the NSP electric transmission line that comes from Hayward, extending southeast for approximately 3,500 feet along the Lakehead pipeline until it again joins the NSP transmission line north of Sand Lake. The area crossed is primarily agricultural land. This is an alternate to segment 332c that follows the existing transmission line south and then east to rejoin the pipeline. Segment 332c affects less new agricultural and forestland and less new visual impact.
331	This segment extends southwest from the existing NSP transmission and Lakehead pipeline ROWs and then south for approximately 1.7 miles, to the Wisconsin Central Rail corridor. The area is agricultural along the northern portion and forested along the southern portion. This segment is an alternate connector between the two main routes. It has no existing infrastructure and would go through agricultural and developed areas.
327	This segment follows the Lakehead pipeline southeast across the LCO Indian Reservation for approximately 3.8 miles. It crosses the Wisconsin Central Railroad, Summit Creek, and Alder Creek. The segment ends near the south edge of the reservation. The area is forested. There are four optional ways of routing the proposed line through this general area. Two of the options are on reservation land. The two routes proposed by the applicants (Oliver 1 and Oliver 2) avoid reservation land. The Oliver 3 Route would use the existing transmission line corridor (segment 320) through the reservation. This segment would provide a shared corridor option through the reservation using an existing pipeline corridor. The proposed Oliver 3 Route through the reservation would have less environmental and visual impact, especially if it were double circuited, than a route through the reservation using this segment. This segment has four historic properties in close proximity to the proposed line that are listed with the SHSW. All of them can be avoided and will not require survey work.
314	This segment follows the Lakehead pipeline to the southeast. It extends approximately 1.8 miles from near the south end of McFarland Lane, across CTH C (Deer Lake Road) near the intersection of CTH C and Valley View Road. The area consists of intermittent forest and agricultural land. This segment is an alternate to segment 315. Each segment has some disadvantages. Segment 315 is longer and, because it is a brand new corridor while 314 is along an existing pipeline corridor, it would affect more acres of forest and farmland. Segment 315 would also further fragment the surrounding forest while segment 314 would require widening a corridor that already exists. Some areas of the forest along segment 315 have not been harvested for over 60 years and the owners would continue that policy. A site visit verified this information. Segment 315 runs along the edge of an area zoned residential/recreational by the county, but there are currently no homes on the land. Segment 314 is on land zoned agricultural but there are two homes 150-300 feet from the centerline.

The following table describes segments that were listed in the application but dropped due to environmental concerns.

**Table 7-32      Oliver Sector - dropped segments**

Segment Number	Notes
374 & 364	<p>These segments are not on any proposed route. Segment 374 starts at USH 53 about 0.5 miles south of the intersection with Wasco Road. It continues east, crossing Heyer Road, Porcupine Creek, and CTH P, for a total of 2.3 miles. The area consists of forested land. Segment 364 continues east crossing the proposed North Country Trail, the existing Historic Portage Trail, St Croix Creek, and the Brule River State Forest. Just north of Jersett Road it turns due south for approximately 6.9 miles, crossing CTH A and Lower Ox Creek. It then turns southeast for 1.6 miles, ending just north of CTH Y near Flat Lake Road, connecting to segment 363. The area consists of forested land including tree plantations and some open pine barrens. These two segments together provide an alternate route around Solon Springs, St. Croix Lake, and avoid a crossing of the St. Croix River. They do, however, raise many other environmental concerns, particularly the crossing of the St. Croix headwaters creek and the Historic Portage Trail. The North Country Trail is proposed to parallel the historic trail for several miles because of the natural beauty of the area and the historical significance of the trail for Native Americans and early fur traders. The SHSW has indicated that bisecting the Historic Portage Trail with a new transmission line would be inappropriate and unreasonable. DNR concurs. In 1999 DNR, with the help of a private donation of \$40,000, purchased an additional 160 acres in this area. There was extensive local support for this acquisition and the goal of maintaining the character and resources of the area.</p>